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THE MIND OF MECHANICAL MAN*

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Brain–Mind Relationship

No better example could be found of man's characteristic desire for knowledge beyond, and far beyond, the limits of the authentic scientific discoveries of his own day than his wish to understand in complete detail the relationship between brain and mind—the one so finite, the other so amorphous and elusive. It is a subject which at present awakes a renewed interest, because we are invaded by the physicists and mathematicians—an invasion by no means unwelcome, bringing as it does new suggestions for analogy and comparison. We feel perhaps that we are being pushed, gently not roughly pushed, to accept the great likeness between the actions of electronic machines and those of the nervous system. At the same time we may misunderstand this invitation, and go beyond it to too ready an affirmation that there is identity. We should be wise to examine the nature of this concept and to see how far the electro-physicists share with us a common road. Medicine is placed by these suggestions in a familiar predicament. I refer to the dangers of our being unintentionally misled by pure science. Medical history furnishes many examples, such as the planetary and chemical theories of disease that were the outcome of the Scientific Renaissance. We are the same people as our ancestors and prone to their mistakes. We should reflect that if we go too far and too fast no one will deride us more unashamedly than the scientists who have tempted us.

Discussion of mind–brain relations is, I know well, premature, but I suspect that it always will be premature, taking heart from a quotation that I shall make from Hughlings Jackson—not one of his best-known passages—because it may have been thought to be a sad lapse on his part. I believe it myself to be both true and useful, and so I repeat it.

> "It is a favourite popular delusion that the scientific inquirer is under a sort of moral obligation to abstain from going beyond the generalization of the observed facts, which is absurdly called 'Baconian induction.' But anyone who is practically acquainted with scientific work is aware that those who refuse to go beyond fact rarely get as far as fact; and anyone who has studied the history of science knows that almost every great step therein has been made by the 'anticipation of Nature'—that is, by the invention of hypotheses which, though not verifiable, often had very little foundation to start with."

He concludes by saying that even erroneous theories can do useful service temporarily. He was no doubt thinking of his own early clinical researches on local epilepsy, the theory of which necessitated crisp localization of motor function, although when first he proposed it the physiological world could not as yet support him. Had he waited for certainty he would never have got near it as early as he did.

So Jackson hinted, and Darwin in comparable words agreed with him. In more recent times K. J. W. Craik rightly drew attention to the real method of scientists, which is to see whether some idea can be substantiated by experiment. They begin without bothering their heads about rigid definitions of what they are doing. Robert Boyle was not interested in making a law but in finding out what happened when gases were compressed. The results happened to be generalizable in a formula. It is the philosophers who insist on logistic definitions which are the more perfect the more they leave out of the vast realms of human striving and usefulness. The so-called Laws of Science had generally no very tidy beginnings. They are no more than science recollected in tranquillity, and not the conscious aim of the eponymous makers of the crucial and revelatory experiments. It may be that the poet who tries to crystallize a moving experience into an immortal line is using his wits in a very similar manner. We must beware of making science too rigid, self-conscious, and pontifical. A. N. Whitehead confessed to me once that he found that he had escaped from the certainty and dogma of the ecclesiastics only in the end to find that the scientists, from whom he had expected an elastic and liberal outlook, were the same people in a different setting. I am encouraged, therefore, to proceed in the hope that, although we shall not arrive at certainty, we may discover some illumination on the way.

Ancient Automata

Before we glance at the new vistas of mechanization opening before us, let us spare a few moments to look at the past, where we shall find that the possibility of building automata has been one of man's dreams since the days of the Trojan horse—a simile more metaphorical than strictly accurate. In the seventeenth century, that era of scientific awakening, there was great interest in possible replicas of animals and men. Florent Schuyl, in 1664, gives several instances, such as the wooden pigeon of Archytas of Tarentum which flew through the air, suspended by counterweights. There was a wooden eagle, that of Regiomontanus, that showed an Emperor the way to Nuremburg, and a flying fly by the same maker. There was an earthen head that spoke; but, above all, a marvellous iron statue that knelt before the Emperor of

*The Lister Oration delivered at the Royal College of Surgeons of England on June 9, 1949.

Morocco and presented him with a request for a pardon for the man who had made him. There were even greater marvels, such as that incomparable statue the Venus of Daedalus, that had quicksilver in its veins and seemed to be alive, and "an infinity of other similar automata, moving and even speaking machines which Coelius Rodiginus mentions in his book on antiquities, and Kircher and many others describe." Gafford, in 1629, had written of statues of men and women which moved and spoke and played musical instruments, birds that flew and sang, lions that leaped, and a thousand other marvels of the inventions of man which astonished the people

That most of the foregoing examples were no more than fables, or huge exaggerations of a grain of truth, we may be very sure. But there was some foundation for them in the many marvels which the traveller might see with his own eyes at that day, or soon after, such as the water gardens of Tivoli and Pratelino, at Saint Germain-en-Laye, at Fontainebleau, at Augsburg and Salzburg. Water- or wind-power and clockwork were the only sources of energy available, but they caused movement in some pretty toys, and although the figures moved clumsily, yet move they did. As the traveller approached a grotto, for instance, and as he stood admiring, he pressed unwittingly a lever hidden beneath a stone, causing Neptune to come forward with his trident raised to defend a water-nymph, whilst the bathing Diana withdrew among the reeds.

If such wonders had already been constructed for the pleasure of noblemen and the entertainment of their guests, how much more perfectly might not the serious scientist contrive a cunning replica of a living thing. As only too often happens, to conceive it possible was as good as its conversion into fact. It could be, therefore it was. I am sure that that is our own temptation.

Descartes's Postulation

The first convincing postulation of mechanical perfection was of course that of Descartes, who believed that animals, though live things because their hearts were hot (Galen's idea), were entirely reflex in their complicated actions, doing all that they did because their construction compelled them. They had no souls, no minds, and therefore no free will. He expressed himself in a manner which could scarcely be bettered as a fair exposition, up to that moment, of the problem of automata. His views are very apposite to the present day, which has become more Cartesian than it realizes. It should, he thought, be perfectly possible to construct an automaton that would behave not only like an animal but, in so far as he was an animal, like a man, because the organs of man and animal were in the main the same. There was an eventual difference: he saw plainly that it reposed in the highest qualities of man's mind and soul.

Descartes made the point, and a basic one it is, that a parrot repeated only what it had been taught and only a fragment of that; it never used words to express its own thoughts. If, he goes on to say, on the one hand one had a machine that had the shape and appearance of a monkey or other animal without a reasoning soul (i.e., without a human mind) there would be no means of knowing which was the counterfeit. On the other hand, if there was a machine that appeared to be a man, and imitated his actions so far as it would be possible to do so, we should always have two very certain means of recognizing the deceit. First, the machine could not use words as we do to declare our thoughts to others. Secondly, although like some animals they might show more industry than we do, and do some things better than we, yet they would act without knowledge of what they were about simply by the arrangement of their organs, their mechanisms, each particularly designed for each particular action (cp. Karel Capek's *Robots*). Descartes concluded: "From which it comes that it is morally impossible that there be enough diversity in a machine for it to be able to act in all the occurrences of life in the same way that our reason would cause us to act. By these means we can recognize the difference between man and beasts." He could even conceive a machine that might speak and, if touched in one spot, might ask what one wanted—if touched in another that it would cry out that it hurt, and similar things. But he could not conceive of an automaton of sufficient diversity to respond to the sense of all that could be said in its presence. It would fail because it had no mind.

Apart from this difference—a vital one indeed—the body seemed undeniably to be a sum of mechanisms. It was so crystal-clear to Borelli and the new scientists that both animal and human bodies were nothing more than a collection of pumps, reservoirs, bellows, fires, cooling and heating systems, tubes, conduits, kitchens, girders, levers, pulleys and ropes, that there was little left to marvel at. Let the vulgar gape, let the devout feel gratitude to God—it was all very plain to the scientist of that age. It was not as plain as they thought. Time has shown that hidden in the materials of which this body is composed are all kinds of biochemical ingenuities. It is a chemical engine such as would have astonished the mechanics. Give a man, to take the simplest of all examples, a beautifully efficient set of aluminium bones in place of his original skeleton and he will die of some unpleasant blood disease because bones are living organs as well as props.

There certainly are things to marvel at, and no small wonders they are. One is the truly extraordinary efficiency of the living organism as judged by weight, energy output, and fuel consumption by comparison with any machine whatever; another is its ability to carry on with its own feed-back controls for decades, without adjustment or repair. In the long run, of course, scientific method made great use of the mechanical likenesses that so impressed the savants of the scientific Renaissance. A great service had been done by destroying mystery and by discrediting Platonic and Aristotelian essences and humours. Most of our advances have been made by use of technical methods common both to machines and to living things. But all our advances have depended on observation of the thing itself, accepting likeness to mechanism only as analogy and not as identity.

I fancy that no one will disagree in summary of the foregoing that, however like the various processes are to other things in physical nature, however amenable they are to examination as physico-chemical processes, they remain unmistakably themselves. We shall reach the same conclusion about the brain—that, however its functions may be mimicked by machines, it remains itself and is unique in Nature. Descartes solved the difficulty by making mind supernatural, placing an immaterial mind independent of organism in the pineal. This was the age-old refuge of those faced with the inexplicable in Nature, as we still see in primitive peoples and in the superstitious. We may well doubt to-day whether a supernatural agency is the basis of mental process. But it was doubted in Lister's time. In 1870 T. H. Huxley reluctantly concluded: "I can find no intelligible ground for refusing to say that the properties of protoplasm result from the nature and disposition of its molecules . . . and if so, it must be true, in the same sense and to the same extent, that the thoughts to which I am now giving utterance, and your thoughts regarding them

are the expression of molecular changes in the matter of life which is the source of our other vital phenomena."

The passage of time which has led us to accept so much has done little to make this conclusion either less true or much more acceptable than it was to Huxley himself. To admit it seems to confess to a certain ordinariness about mind, an ordinariness to which the richness and plasticity of its powers seem to give the lie and in revenge to demand a stupendous physical explanation. And there is something more. Since no thinking man can be unaware of his fellows and of the political scene he will find that the concept of thinking like machines lends itself to certain political dogmas inimical to man's happiness. Furthermore, it erodes religious beliefs that have been mainstays of social conduct and have brought happiness and serenity of mind to many. These possibilities would have leaped to the forefront of Joseph Lister's mind as they do to mine. But I hope to show that we can take courage.

Modern Automata

Ingenuity of invention at the present time confronts our more sophisticated eyes with models as seductive as were the cruder automata of old. By means of electric motors, thermo-couples, photo-electric cells, radio tubes, sound receptors, and electrical resistances variable to moisture it should be possible to construct a simple animal such as a tortoise (as Grey Walter ingeniously proposed) that would show by its movements that it disliked bright lights, cold, and damp, and be apparently frightened by loud noises, moving towards or away from such stimuli as its receptors were capable of responding to. In a favourable situation the behaviour of such a toy could appear to be very lifelike—so much so that a good demonstrator might cause the credulous to exclaim "This is indeed a tortoise." I imagine, however, that another tortoise would quickly find it a puzzling companion and a disappointing mate.

It is the infinite variety of the behaviour of the world of animals that confuses us. The stage is too vast, the cast too numerous, the qualities of their performances too varied. We should not show any hesitation in attributing conscious mental processes to animals to-day. Greatly though information has increased, the field study of animals in their natural state is with difficulty pursued over long periods, so that we have but short chapters from their lives, and some are too shy, too evasive, or too episodic in their sojourns to allow of continuous recording. We should find great difficulty in grading animal minds. Such knowledge as we have is enough to teach us that even among creatures of the same genera there are great differences in the cleverness of individuals. There are not only clever dogs and dull ones, but clever hens and stupid hens, attractive hens (to the cock) and plain ones, and, for all we know, clever and lovely flies, clever elephants, clever snakes and fish, with dull-witted brothers and ugly sisters. Obstinacy, no doubt, varies in the mule.

At what level in the animal scale something that can be called mind appears for the first time we do not know. J. Z. Young's experiments show that even an octopus can learn, be so puzzled by problems set it as to be made what we might be allowed to call neurotic. That this could happen to monkeys we already knew from ingenious experiment, and now the reproduction of bewilderment that paralyses action in such low forms of life is singularly interesting. The child, confused by its teachers and unable to grasp the logic of its lessons, is but a more complex example of the puzzled octopus. It seems to me likely that the number of synapses in a nervous system is the key to the possible variations in its behaviour. Provided that the neurones are not too numerous and consequently the synaptic patterns of alternative routes for impulses not too varied, it is not difficult to imagine that some, though not all except the simplest, animal behaviour is the result of a pattern of reflexes, much more complicated, it is true, than the plain push-button-and-answer of some spinal reflexes.

But neither animals nor men can be explained by studying nervous mechanics in isolation, so complicated are they by endocrines, so coloured is thought by emotion. Sex hormones introduce peculiarities of behaviour often as inexplicable as they are impressive (as in migratory fish). We should not have any real idea how to make a model electronic salmon however simple relatively its nervous system is, whilst birds would be as far beyond us again. I can see that, although a good deal of instruction might be got from varying the proportion of, say, photo-electric cells, thermo-couples, and sound-receivers perhaps above and below the range of human hearing to see how variations affected the antics of a model, it remains uncertain how far we should be truly enlightened on the obscurities of animal behaviour. Olfaction, which plays so large a part in some creatures, would be particularly difficult to mimic. So would the effects of satisfaction of appetites of all kinds and of fatigue—such important influences.

When all is said—and much more could be said on both sides—we emerge with the conviction that, although much can be properly explained by conditioned reflexes and determinism (in which idea mechanism lurks in the background), there is a fringe left over in which free will may act (i.e., choice not rigidly bound to individual precedent), a fringe that becomes larger and larger the more complex the nervous system. Both views are correct in their own spheres; neither is wholly correct for everything. I accept here the emendation of Niels Bohr, who sees this as the counterpart of the impossibility of fully describing the electron either as a point or as a wave. It is either, according to how it is examined or in what circumstances. This paradox the mathematicians call the Law of Complementarity, and are not afraid to regard the same thing as true in two different guises. We may do well to follow their example.

The Nervous Impulse

The electronic computing machine works as a logical system, making a choice between "yes" and "no" at a great number of points in a vast chain, with the speed of electricity. Because it uses wireless valves, wired circuits, mercury tubes, condensers, and all the paraphernalia of electricity it works thousands of times faster than can the human brain. Before we proceed further in considering machines we must see how far we can go in saying that our own nervous system is electrical. We shall see that it is not so, in the layman's meaning of the term, but the electrical processes that accompany its actions afford problems of absorbing interest. The fastest known nerve impulses in mammalian nerve or spinal cord travel at about 140 metres per second, the slowest anything down to 0.3 metre per second. What their speed may be in the brain we do not know, but very likely perhaps it does not differ much from these figures. The passage of impulses through single synapses is known by the work of Lorente de Nó and others to cause a delay of 0.75 millisecond. Such delays, and there are sure to be many in the cortex, impose a certain additional slowness on nervous actions.

The flashing speed of thought which so much impresses us is, it seems, a rather slow affair, but in view of the short distances that impulses have to travel in the brain the rate is fast enough to appear instantaneous to us. It is true

that, although the electrical current cannot itself be slowed down from its normal 1,000 ft. per microsecond, it is possible to slow down the arrival of an impulse by devices such as delay systems, and especially by the trigger systems, in which each component excites the next, at a rate that can be made inferior to conduction in nerve. There is, it seems, no limit to the slowing which could be imposed, down even to 1 foot an hour. This would entail complex apparatus. For many years nothing recognizably the counterpart of such systems could be found in the structure of the nerve fibre, but there are those who believe now that the retardation is at the nodes of Ranvier, with high-speed leaps between each node (the "saltatory theory" of conduction). Significantly, nodes of Ranvier have been found in the tracts of the spinal cord.

It remains an anomaly that the speed of the nervous impulse is usually slower in the bare fibres of non-medullated than in medullated nerve, as if the nerve sheath increased the speed. To the surgeon the results of nerve injuries and the long delay in recovery seemed to negative completely the electrical nature of the impulse. It certainly would be impossible if we thought of electrical currents flowing along plain copper wires. But the delay in recovery is accounted for equally well in either view on the ground that the passage of the impulse requires a perfect conductory system, which, unlike copper wire, takes time to repair. Physiological conduction demands more than anatomical continuity, the axons must be a certain size and the sheath a certain thickness, as Young shows, and it is conceivable that the sheath needs to acquire certain physical properties proper for polarization. Whichever way one looks at it the speed of the nervous impulse presents us with a problem in electricity as a biological fact that is so special as to be unique.

Lastly, although electronic methods permit of much more local, more individual questioning of elements in the nervous system, we must not overlook the chemical agencies which transmission demands and from which nerve cells derive their energy. It seems very plain that if the nervous system is examined by electrical methods answers must be obtained in terms of electricity. But if it is examined in terms of chemistry, as Sir Henry Dale and G. L. Brown have done, the same thing now appears as a wonderfully implemented electro-chemical machine. There may be other methods of investigation still to be discovered.

It would probably be wrong to say that electrical methods are more delicate than chemical, yet it is certainly much easier to render an account of nervous actions and to represent the results of understandable diagrams by the former than by the latter means. A one-sided view is only too easily acquired, but let the artificers remember chemistry, for metabolic disorders can block transmission —the "invisible lesions" of clinical neurology of which Sir Charles Symonds has written. The recollection that chemical agencies and enzyme actions are no doubt eventually explicable in physical terms does not entirely remove the force of this reminder.

Calculating Machines

These lines of thought, however elementary, seemed to me a necessary prologue before we come to consider systems which have a purely electronic structure. We shall be right in concluding that it does not greatly matter what the nervous impulse really is, except that, vastly multiplied, it is part of a communication system, a self-controlled information system (self-controlled because of its integrating feed-backs), and could therefore be compared with man-made systems in these classes. Such systems happen to be a peculiarly rich development of our own times. But we shall be quite wrong if we approach the subject on any other terms except those of analogy.

To be just, nothing more than analogy is claimed by most of their constructors (some, like Professor Williams, do not go so far even as that), but there is a grave danger that those not so well informed will go to great lengths of fantasy. If we see that some nervous tissues behave like some electronic circuits we must all the time remember that the resemblance is with fragments of the nervous system and not with the whole integrated nervous system of man. It is only right when we do so that we recollect something else, that we cannot be sure that the highest intellectual processes are still carried out in the same way. Something quite different, as yet undiscovered, may happen in those final processes of brain activity that results in what we call, for convenience, mind.

The histological pattern of the human cortex leaves us with a host of questions unanswered. We may be in the familiar position that I sketched in earlier passages of stretching our knowledge to cover something to which it does not apply. Abstract thinking may not be a matter of neurone mechanics as we know them at lower levels. But let us proceed for the moment by supposing that the system remains the same throughout—and a large assumption it is—and that it is for the moment comparable with something of a different material composition but with a similar plan. The mechanisms of calculating machines are outside the province of neurologist or surgeon, and I have to rely upon and gratefully acknowledge the assistance of Professor F. C. Williams, professor of electro-technics in my own university, and the information gleaned from Dr. Wiener, of Boston, in his entertaining book on the new science that he has christened "Cybernetics" (1948).

Computing machines use very many fewer "neurones" than has the brain. One may compare the 10,000,000,000 cells of Adrian's estimate with the 20,000 valves of the first big American machine ENIAC at Princeton, and the 1,000 of Professor Williams's newer and more efficient experimental and most ingenious instrument in Manchester. McCulloch, of Chicago, was reported as saying that a model that contained valves and wiring anything approaching in number the neurones in the human nervous system would require a building the size of the Empire State Building to house it and the complete electrical output of Niagara Falls to run it. Calculating machines certainly consume great quantities of electricity and generate considerable heat. It is probable that McCulloch's estimate is lavish because the brain almost certainly sends out and receives the same message through several fibres and cells so that we have more nervous tissue than we need and more certainly, than we use if the meagre effects of excisions from some areas mean what we think they mean.

Wherein do any analogies lie? They lie in certain likenesses between wireless valves and nerve cells in this way, that the valves can be so wired as to store messages, to show the Sherringtonian principles of "convergence" and "divergence," can be inhibited from action, and may be arranged so as only to transmit a message (a symbol in terms of electricity) if they are receiving impulses from one or several other valves and not to transmit if other excitations fail to come in. The likeness between such an arrangement and that of the impulses arriving in a nerve cell through its dendrites and the behaviour of neurone pools is so close as to convince us that in these actions some nervous tissues with simple patterns behave extremely like

some electronic circuits.* It gives additional support to the belief that human tissues behave according to some physical laws discoverable elsewhere in Nature, without surrendering their own individuality. This is a belief old enough to be both useful and respectable.

The fact that calculating machines can be made to store electrical charges representing numbers for long periods of time suggests that there is "memory" in the machine, which must in fact "remember" how far it has got with a calculation in order to be able to proceed, just as we do ourselves. It must also "remember" all the data and the procedure leading to solution. It retains its "memory" until it is cleared of its charges. Using electronic instead of nervous impulses it can carry out calculations with such great rapidity that it will solve a simple calculation in milliseconds, and in an hour one that would employ a mathematician several months. We are invited to consider that the memory that the machine has in the form of stored charges is perhaps the same as memory in man or in animal, as a "charge" in a cell or a group of those millions of cells whose individual uses we do not know.

All that one is entitled to say is that it could be something of that kind, but that the electrical machine offers no proof that it is so. We might guess so much without a machine, nor does it tell us what the nature of the "charge" in a nerve cell is, except to assume that it is electrical (for which there is no present justification). Damage to large parts of the human brain, entailing vast cell losses, can occur without serious loss of memory, and that is not true of calculating machines so far, though so large a one might be imagined that parts of it might be rendered inoperative without total loss of function. It can be urged, and it is cogent argument against the machine, that it can answer only problems given to it, and, furthermore, that the method it employs is one prearranged by its operator. The "facilities" are provided and can be arranged in any order by "programming" without rebuilding.

It may be objected that the second argument is equally true of man; our difficulty is in his case that we have not seen the blue-print from which he was constructed, and that we have been baffled by our attempts to reconstruct it. The first objection can be met by the counter proposition that man himself answers only such propositions as are put to him by his environment, and takes us back indeed to Aristotle's "Nihil est in mente quod non," etc., that our minds are built by education and experience data, processed by the machine, our brain. But the calculating machine which man makes himself throws no light on this problem; it only appears to do so.

There is another analogy of which Wiener has made interesting use. It is this: that computing machines with complicated circuits may develop spontaneous functional faults in which the operation circles endlessly in a closed loop instead of proceeding in the way intended. This is a not uncommon "disease" of electronic computing machines. It can be cured by cutting off the current, by shaking the machine, or by putting into it a "shock" charge. Wiener makes much of the likeness between this functional machine-illness and the methods employed in curing obsessional diseases in man (sleep or narcosis, leucotomy or E.C.T.). The likeness stands or falls on the acceptance of Moniz's suggestion, and it is no more, that an obsession is a chain reaction in neurone mechanisms by which a dominant idea blocks the normal functioning of mind and behaviour. It is a good analogy, but it neither proves nor disproves the theory that obsessions are in fact exactly of that kind. They are certainly vastly more complicated than the abnormal "circulation disease" in a calculating machine. I repeat that it is again only analogy, but it is one which the impulsive may much too easily accept as ambivalent proof of identity, simple and diagrammatic.

Wiener made the suggestion that the searching process in automatic telephone exchanges, by which unoccupied circuits are looked for by the electrical equivalents of incoming number combinations, is very likely the counterpart of what happens in the nervous system. This may be true, but the alternative pathways in the cord and brain are so great that "engaged" signals will be rare. "Previous engagement" might, however, account for the failure of some messages to reach consciousness, or explain in different language our inability to do several things at the same time. Comparisons with the scanning processes of television may yet prove instructive. Ideas such as these remind us that we do not need to accept exact similarity for us to look with renewed interest at old problems. They remind us how far we have advanced since we could be satisfied by comparing the nervous system with a hand-operated telephone exchange.

Thinking

The activity of the nerve cells in the grey matter even of an isolated segment of the spinal cord can be demonstrated by electronic detectors. The activity is greater when the cord is in continuity with the brain and falls to a minimum when the roots are divided. Of the vast stream of sense data that pour into our nervous systems we are aware of few and we name still fewer. For it is the fact that even percepta are wordless. Only by necessity do we put a vocabulary to what we touch, see, taste, and smell, and to such sounds as we hear that are not themselves words. We look at a landscape, at the rich carving and majestic architecture of a cathedral, listen to the development of harmonies in a symphony, or admire special skill in games and find ourselves woefully lacking in ability to describe our percepts. Words, as we very rightly say, fail us either to describe the plain facts of these experiences or to impart to others our feelings. Gesture at times speaks more tellingly than tongues.

From these plain truths has arisen the profession of the critic, who has himself to learn and to teach the public to accept a conventional paraphrasis, sometimes taking refuge in describing painting in terms of music and vice versa. The variety of the visual and general perceptual scene alone is too great for those frail instruments—words—and it is because of this that literature flourishes. But without using words, though richer in the variety of our experience and with words only just below the surface, our minds are not very dissimilar from those of animals, and it is not difficult to conjecture that a Trappist existence might, for a brief period, be not unpleasant. The development of this theme would take me too far, but it is necessary for us to bear it in mind in considering mechanism and thinking. Granted that much that goes on in our heads is wordless (for if it is not, then we must concede words, an internal vocabulary, to animals), we certainly require words for conceptual thinking as well as for expression. It is here that there is the sudden and mysterious leap from the highest animal to man, and it is in the speech areas of the dominant hemisphere rather than in the pineal that Descartes should have put the soul, the highest intellectual faculties.

It is almost boring to repeat that it is because he has a vocabulary that man's intellectual progress has been made possible—by the day-by-day record of how far he has gone in his pilgrimage towards finite knowledge, that journey

*I am obliged to my colleague, Professor Schlapp, for deductions which he drew chiefly from the Cambridge machine and for other wise comments.

without an end. We remember more, that language is not static, but that neologisms continually mark our progress not only in general ideas but in science. We use to-day scores of scientific terms that men who lived as recently as Priestley, Lavoisier, and Darwin would not understand. It is not enough, therefore, to build a machine that could use words (if that were possible), it would have to be able to create concepts and to *find for itself* suitable words in which to express additions to knowledge that it brought about. Otherwise it would be no more than a cleverer parrot, an improvement on the typewriting monkeys which would accidentally in the course of centuries write *Hamlet*. A machine might solve problems in logic, since logic and mathematics are much the same thing. In fact some measures to that end are on foot in my university's department of philosophy. If the machine typewrites its answers, the cry may rise that it has learned to write, when in fact it would be doing no more than telegraphic systems do already.

Nor must we overlook the limitations of the machines. They need very intelligent staffs to feed them with the right problems, and they will attempt the insoluble and continue at it until the current is switched off. Their great advantage is their speed compared with a human mind, and I have given reasons for that. But, it may be asked, is that so very much more marvellous than the crane that can lift so much more than can a man or than an automobile that can move so much quicker?

The great difference in favour of the calculating machine as compared with the crane, and I willingly allow it, is that the means employed are basically so similar to some single nervous lay-outs. As I have said, the schism arises over the use of words and lies above all in the machines' lack of opinions, of creative thinking in verbal concepts. I shall be surprised, indeed, if that gap is bridged, for even supposing that electrical charges could be made to represent words, what then? I cannot see that anything but jargon would result. Not until a machine can write a sonnet or compose a concerto because of thoughts and emotions felt, and not by the chance fall of symbols, could we agree that machine equals brain—that is, not only write it but know that it had written it. No mechanism could feel (and not merely artificially signal, an easy contrivance) pleasure at its successes, grief when its valves fuse, be warmed by flattery, be made miserable by its mistakes, be charmed by sex, be angry or depressed when it cannot get what it wants.

Conclusion

I conclude, therefore, that although electronic apparatus can probably parallel some of the simpler activities of nerve and spinal cord, for we can already see the parallelism between mechanical feed-backs and Sherringtonian integration, and may yet assist us in understanding better the transmission of the special senses, it still does not take us over the blank wall that confronts us when we come to explore thinking, the ultimate in mind. Nor do I believe that it will do so. I am quite sure that the extreme variety, flexibility, and complexity of nervous mechanisms are greatly underestimated by the physicists, who naturally omit everything unfavourable to a point of view. What I fear is that a great many airy theories will arise in the attempt to persuade us against our better judgment. We have had a hard task to dissuade man from reading qualities of human mind into animals. I see a new and greater danger threatening—that of anthropomorphizing the machine. When we hear it said that wireless valves think, we may despair of language. As well say that the cells in the spinal cord below a transverse lesion "think," a heresy that Marshall Hall destroyed 100 years ago. I venture to predict that the day will never dawn when the gracious premises of the Royal Society have to be turned into garages to house the new Fellows.

I end by ranging myself with the humanist Shakespeare rather than the mechanists, recalling Hamlet's lines: "What a piece of work is a man! How noble in reason! how infinite in faculty; in form, in moving, how express and admirable! in action, how like an angel! in apprehension, how like a god! the beauty of the world! the paragon of animals!" In that conclusion, if not always in my approach to it, I feel confident that I should have won the approval of that bold experimenter and noble character in whose remembrance this oration was founded.

THE USE IN CHILDREN OF PROCAINE PENICILLIN WITH ALUMINIUM MONOSTEARATE

BY

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Frequent intramuscular injections of penicillin preparations to children often cause much pain and unhappiness. There have been many attempts to prolong the therapeutic action of a single injection by using penicillin added to bases relatively insoluble in water. Such preparations are based on the premise that a single injection will introduce into the body a depot of penicillin which will be released slowly, thus achieving a therapeutic concentration in the blood over a prolonged period.

Procaine penicillin G, described by Salivar, Hedger, and Brown (1948) and Sullivan, Symmes, Miller, and Rhodehamel (1948), is a relatively insoluble equimolecular combination of procaine together with the sodium or potassium salts of penicillin G. It is usually prepared as a suspension in a base of refined sesame or arachis oil. The clinical value of procaine penicillin has been described by Herrell, Nichols, and Heilman (1947) and Boger, Oritt, Israel, and Flippin (1948). In adults it is claimed that adequate blood levels can be demonstrated up to 24 hours after one injection of 300,000 units. Similar levels were found after single daily injections in children by Carson, Gerstung, and Mazur (1949). That blood levels in children 24 hours after a single injection may be variable has been shown by Emery, Stewart, and Stone (1949). It is realized, however, that procaine penicillin has considerable advantages over previous preparations.

Buckwater and Dickenson (1947) described a new vehicle for the intramuscular administration of penicillin, in which penicillin salts are suspended in peanut oil combined with aluminium stearate. It would seem that the aluminium ester

produces a unimolecular envelope to the penicillin particles, to some extent preventing solution of the penicillin. (This preparation is not to be confused with the aluminium salt of penicillin, the experimental activity of which was reported by Reid (1947).)

Thomas, Lyons, Romansky, Rein, and Kitchen (1948) studied the effect of a single injection of various penicillin salts in a peanut-oil medium together with 2% (w/v) of aluminium monostearate. They found that the absorption of penicillin from the peanut-oil preparation containing aluminium stearate was delayed as compared with the absorption from the same salts in peanut oil alone or in peanut oil with wax. A single intramuscular injection of procaine penicillin in peanut oil with aluminium monostearate resulted in blood concentrations being maintained over a longer period than after a single injection of similar preparations of sodium or aluminium penicillin. It was further observed that the smaller the size of the individual particles of the preparation the greater the prolongation. The greatest prolongation was when 95% of the particles were under 5 μ in diameter.

Similar observations on the importance of particulate size have been made with respect to suspensions of procaine penicillin by Dowling *et al.* (1947) and Welch, Hirsh, Taggart, and Smith (1947). Clinical trials of procaine penicillin in an oil and aluminium monostearate gel have confirmed the production of prolonged blood levels. Robinson, Hirsh, Milloff, and Dowling (1948) found that the majority of their patients had assayable blood levels after 24 hours, while one-third had assayable levels after 48 hours.

This paper records an investigation of penicillin levels in the blood of children following the injection of a preparation of procaine penicillin in arachis oil with 2% (w/v) aluminium stearate.

Method

Dosage was graded according to age. Children over the age of 5 were given the usual adult dose of 300,000 units, which is 1 ml. of the emulsion. Children from 1 to 4 years old were given 150,000 units (0.5 ml.). Under the age of 1 year, some were given 75,000 units and others 150,000 units. Injections were made into the vastus lateralis.

Penicillin serum levels were estimated by the capillary-tube method described by Fleming (1943), using whole blood inoculated with Richard's strain of *Streptococcus pyogenes*. The serum used for assay was from capillary blood collected in Wright's capsules. Control specimens were taken before the injection of penicillin. Daily specimens of blood were taken from all patients for 48 hours; in some it was not possible to continue taking specimens beyond this time. In seven out-patients injections were repeated at the end of 48 hours, and in 11 ambulatory children injections were given daily for three days. In 11 in-patients the serum levels were obtained at one, three, and six hours after the first injection to assay the rapidity of absorption.

The particulate size of the procaine penicillin in the suspension of each bottle used was estimated by direct measurement under the microscope. Over 95% of the particles of the preparation were below 5 μ in diameter, which agreed with the claim made by the makers (Imperial Chemical (Pharmaceuticals), Ltd., Manchester).

Note on Technique of Injection.—The chief disadvantage of this preparation is the difficulty of drawing the suspension into the syringe. A wide serum needle can be used. A more economical method is to pump air into the bottle, using a No. 1 Record needle, thus causing the pressure in the bottle to fill the syringe. If the injection is made at right-angles to the skin and muscle there is a tendency for the material to leak back along the needle track, particularly if the muscle is held tense. This back leak is almost entirely eliminated by making an oblique injection.

Results

The serum penicillin levels obtained in 11 patients one, three, six, and 24 hours after the injection of procaine penicillin with 2% aluminium stearate are given in Table I.

TABLE I.—*Serum Penicillin Levels in 11 Children in Bed During the 24 Hours Following the Injection of Procaine Penicillin in 2% Aluminium Stearate*

Serum Penicillin Level (u./ml.)	Hours after Injection			
	1	3	6	24
8		1		
4				
2	3	2	1	
1	3	3	2	1
0·75	1	2	2	
0·50	4	3	3	3
0·25			3	5
0·12				2

Dose of penicillin: 0–1 year, 75,000 units; 1–4 years, 150,000 units; 5–12 years, 300,000 units. The figures give the number of patients showing the tabulated levels at the time intervals.

In all patients the serum level was 0.5 u./ml. or higher at one hour and three hours. At six hours the concentration fell a little, but the minimum level was 0.25 u./ml., and at 24 hours the minimum level was 0.12 u./ml.

An analysis of the daily serum penicillin levels in 66 children of varying ages, following the injection of the aluminium procaine penicillin, is given in Table II. All

TABLE II.—*Analysis of the Serum Penicillin Levels in 66 Children after the Injection of Procaine Penicillin with 2% Aluminium Stearate*

Age Group in Years	Dose of Penicillin (Units)	In- or Out-Patients	No. of Patients	No. of Cases Giving Serum Penicillin Levels of 0·06 u./ml. or Over			
				24 Hours	48 Hours	72 Hours	96 Hours
0–1	75,000	Mixed	8	8	8	4 of 5	2 of 2
	150,000	,,	6	6	3 of 3	2 of 2	—
1–4	150,000	I.P.	14	14	11 of 11	7 of 10	7 of 7
	150,000	O.P.	11	10	9 of 10	—	—
	300,000	I.P.	1	1	1	1	1
5–13	300,000	I.P.	21	21	16 of 16	11 of 14	5 of 12
	300,000	O.P.	5	5	4 of 4	1 of 1	—
0–13	As above	O.P.	8	Reinjection after 48 hours		8	5 of 5
		I.P.	3			3 of 3	3 of 3

the children under 1 year old gave a serum level of 0.06 u./ml. or over at the end of 48 hours after the injection. Four of five receiving the smaller dose of 75,000 units had a level of 0.06 u./ml. or over at 72 hours.

All the 14 in-patients aged 1–4 who were given 150,000 units had a level at least 0.12 u./ml. at 24 hours and 0.06 u./ml. at 48 hours, and seven of these followed to the end of a fourth day showed levels of 0.06 u./ml. Of 11 out-patients aged 1–4 given 150,000 units, all except one had levels of 0.06 u./ml. or over at 24 and 48 hours after injection. One child aged 4 was given 300,000 units, and he still had a level of 0.06 u./ml. at the end of four days, when he was discharged.

All the 26 patients aged 5 to 13 given 300,000 units had levels of at least 0.06 u./ml. at 24 hours, as did all 20 examined at 48 hours; 12 of 15 examined at the end of three days showed similar levels. Five of 12 patients of this group showed a level of 0.06 u./ml. after four days.

Eight patients given injections on alternate days maintained levels of at least 0.06 u./ml.

The blood penicillin levels of 11 children who received a daily injection of procaine penicillin with aluminium stearate are given in Table III. In the great majority the levels were above 0.12 u./ml. throughout.

TABLE III.—*Serum Penicillin Levels in 11 Ambulant Children given Once-daily Injections of Procaine Penicillin with 2% Aluminium Stearate*

Serum Penicillin Levels (u./ml.)	Control	No. of Patients Showing Tabulated Levels at the End of		
		1 Day	2 Days	3 Days
4		1		
2			1	
1		1		2
0·75			1	1
0·5			2	4
0·25		5	3	3
0·12		2	3	1
0·06		2	1	
0·03				
Nil	11			

Dose of penicillin: 0–4 years, 150,000 units; 5–12 years, 300,000 units.

No child showed a general reaction to the injection. One parent stated that her child had walked with a limp for 12 hours afterwards, but on examination we could find no localized swelling or tenderness.

Discussion

This investigation was concerned primarily with serum penicillin levels obtained after the injection of procaine penicillin with aluminium stearate, and no attempt has been made to assess accurately the therapeutic value of the preparation; the clinical results, however, were satisfactory.

The high serum penicillin levels obtained during the first three hours after injection suggest that there is more rapid absorption at this period than later. This is possibly due to absorption before the formation of an inflammatory barrier and to the immediate absorption of any free penicillin already present in the preparation.

The results we have obtained with the preparation are considerably better than those obtained with procaine penicillin without aluminium stearate, and agree very well with the findings of Thomas *et al.* (1948) and Robinson *et al.* (1948) in adults. In the doses we have used a level of at least 0.06 u./ml. was obtained after 48 hours in all but one out-patient. Furthermore, a level of at least 0.06 u./ml. was found in 20 of 22 patients whose blood was examined at the end of three days.

From the results we have obtained it would seem theoretically reasonable to give injections on alternate days, and in the eight children in which this was carried out a level of 0.06 u./ml. or over was maintained. Eleven children were, however, given daily injections to ascertain if there was a summation effect and if it was possible to maintain high levels of penicillin in the blood by this means. Daily injections were carried out for three days, as it was thought that from the persistence of levels in ambulant children for three days only a maximum level would be reached by the end of three days and no higher levels could be reasonably expected later. The results shown in Table III indicate that daily injections not only provide a satisfactory level but give a summation effect. It is clear that the blood penicillin levels are maintained in the great majority of cases above 0.1 u./ml., a level which is bacteriostatic for almost all pathogens other than those showing particular resistance, such as particular strains of staphylococci.

A disadvantage of the preparation is its oily nature, which makes it rather more difficult to administer than aqueous preparations of penicillin. There is also the possibility of sensitization, and possibly a skin test with the preparation may have to precede treatment. We have not seen any reaction, but we have not given the preparation to any child continuously over a very long period. The possibility of the effects of absorbed procaine after conversion to para-aminobenzoic acid interfering with the action of sulphonamides is largely theoretical and extremely difficult to prove. Carson, Gerstung, and Mazur (1949) could obtain no conclusive evidence on this point when using the earlier simple procaine penicillin, in which the rate of absorption is much greater than in this suspension with aluminium stearate.

This preparation of penicillin seems to have advantages over all previous preparations that have been marketed. It gives an almost painless injection site, minimal local and no general reaction, and in our experience an almost stable concentration of penicillin in the blood for at least 48 hours; and one is confronted with the unusual prospect of deciding at what daily intervals injections should be given.

Summary

Blood penicillin levels have been followed in 66 children of varying ages given graded doses of procaine penicillin in arachis oil with 2% aluminium stearate in which over 95% of the particles were below 5 μ in diameter.

The doses given were 75,000 units (0.25 ml.) and 150,000 units (0.5 ml.) to children under 1 year, 150,000 units to children aged 1–4 years, and 300,000 units (1 ml.) to older children.

There is a rapid initial absorption of penicillin, giving a level above 0.2 u./ml. by the end of the first hour, and this level is maintained for at least three hours.

In all but one case a blood penicillin level of 0.06 u./ml. or more was maintained for at least 48 hours after injection.

Children given daily and alternate daily injections maintain a continual penicillin level in the blood, the daily injection producing higher levels than the alternate daily injection.

We conclude that procaine penicillin in arachis oil with 2% aluminium stearate is a suitable preparation for the daily injection of penicillin.

We would like to thank Dr. T. Colver, whose patients were used in these estimations, our nursing and medical colleagues for their co-operation, and Miss Dorothy Lee for laboratory technical assistance. The penicillin preparation was kindly supplied by Imperial Chemical (Pharmaceuticals), Ltd., Manchester.

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According to a report (B.U.P.) the war in China has led to a great increase in the price of menthol. The stock of this substance in Hong Kong is said to be practically exhausted, and it is almost impossible to obtain more from the interior of China under present conditions. During the war, when Far Eastern supplies were cut off, Brazil developed the production of menthol, which is derived from peppermint oil, but this year's output is estimated to be less than 100 tons, and the United States alone uses between 250 and 300 tons a year.

INJURIES TO THE SUPERIOR LONGITUDINAL SINUS

BY

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During the six months following D Day, 1944, a considerable number of cases of head injury were received at an E.M.S. neurosurgical unit. These presented every type of injury, with varied signs and symptoms, but among them were a number of injuries which had involved the superior longitudinal sinus (S.L.S.) to a varying degree. These were an interesting group, and 11 of the 26 cases seen were selected for study as presenting fairly clear-cut examples of the S.L.S. syndrome without the complicating factors of other injuries. As a group these cases did very well, and this study is directed with special reference to their follow-up over the last four years.

Anatomy

The S.L.S. begins in the anterior fossa of the skull, at the crista galli, where it communicates with the veins of the nasal cavity or with the angular veins. It runs longitudinally backwards over the convex surface of the cerebrum, as far back as the level of the internal occipital protuberance, and then curves laterally, usually to the right, to form the transverse sinus. Its anatomy has been investigated by Sargent (1910–11), who describes several features of importance. It receives the superior cerebral veins from the mesial surface and from the upper half of each cerebral cortex. The veins from the lower half drain into the Sylvian system and there is an inconstant but adequate anastomosis between the two systems, so that the occlusion of one set of veins is not necessarily accompanied by blockage of the venous outflow from the area which it drains. The upper set of cortical veins group together to form four main channels—the frontal, pre-central, post-central, and occipital veins.

The S.L.S. is accompanied on each side by three main venous channels or lacunae—the frontal receiving the frontal cortical veins, the parietal receiving the pre- and post-central veins, and the occipital receiving the occipital cortical veins. These lacunae vary in size, but Sargent reports one case in which the parietal lacuna on each side measured 15 cm. in length and 2.5 cm. in breadth at its widest part.

The cortical veins terminate in two main ways. Either they run beneath the lateral lacunae and empty into them by means of openings in their floor, the blood then draining through a number of openings into the S.L.S., or they run completely beneath the floor of the lacunae and open direct into the S.L.S.

Injury

Gordon Holmes and Sargent (1915) reported over 70 cases of injury to the S.L.S. from wounds without infection, and discussed the possible pathology of the symptoms in the light of this anatomical knowledge. The present paper deals with a far smaller group, but one which has been followed up for a considerable period. The data have been accumulated from our own notes and from the field medical cards that accompanied the cases. Work was carried out under pressure and the notes are therefore not always as full as one might wish.

Of the 11 patients five were wounded while under shell or mortar fire, two suffered from bomb blast, one from a bullet wound, and one from some bridging equipment falling on his head. In two cases the history was unobtainable. Four patients retained consciousness and were able to give good and coherent histories. Loss of consciousness in the others varied from ten minutes to four days, but with the exception of this last case and one other the period of unconsciousness was brief, and retrograde and post-traumatic amnesia was very short.

The injury was described as a "lacerated wound" in six of the 11 cases, and these included three cases in which consciousness was retained. Two cases had protruding brain substance and two had penetrating wounds.

Subsequent *x*-ray examination revealed the presence of a bony depression in the region of the S.L.S. in seven cases; three others had severe bony injury with in-driven bone fragments, and in only one case was there no evidence of bony injury.

Gordon Holmes and Sargent described three main types of wound which correspond to those from which our own cases suffered: (1) superficial tangential laceration with no evidence of fracture; (2) bony depression with compression of the S.L.S. or of the lacunae, without injury to its walls; and (3) penetrating or in-and-out wounds, with the entrance and exit wounds on opposite sides of the midline and close to it.

Operation

It is not necessary to give detailed reports of each operation, but treatment varied from simple excision of the wound edges to a more elaborate operation involving removal of damaged bone, brain tissue, and foreign bodies. In all cases, except one in which a drain was left *in situ* for two days, the wounds were closed in two layers with closure of the dura. Full courses of penicillin and sulphathiazole were given as a routine.

In the description of the operation specific mention of the S.L.S. was made in five cases. In each case the impression gained was that the sinus remained patent, which corresponds to the description given by Gordon Holmes and Sargent, whose series of cases was larger and who had the opportunity of performing post-mortem examinations in some cases. At necropsy they usually found a thrombus of the S.L.S., but in view of the presence of trabeculae within its walls they thought that probably the whole lumen was not obstructed. They also described a case in which injury lay to one side of the midline, with thrombosis limited to the lateral lacunae beneath it.

The superficial cortical veins which enter the sinus in the region of the wound were found to be swollen and firm, and could not be emptied by pressure. The area of cortex drained by these veins was swollen and firm, with flattened convolutions.

Examination

Of the 11 cases five had signs involving both lower limbs only, four had involvement of both lower limbs and one upper limb, and two had involvement of all four limbs.

Motor Symptoms.—There was a loss of power in all cases, varying from a slight diminution to complete paralysis. The distribution of the weakness was constant in that in the lower limbs the distal segments were affected to a greater degree than the proximal, and in the upper limbs the opposite was the case. A typical case was that in which there was no movement of either leg below the knee, although power at the hips was such that both legs could be raised from the bed. In another case there was a complete paralysis of both lower limbs, with paralysis of the right upper arm; and in a third case there was a paralysis of both legs, with reduction of power, complete in the left upper limb and affecting all the joints of the right upper limb, particularly the shoulder.

All cases showed an increase in tone varying from a slight degree to a marked spasticity. This rigidity was typical again in that it appeared in each case almost immediately, was maximal at the start, and then showed a progressive improvement *pari passu* with recovery of function. As would be expected in this clinical picture of a spastic paresis, the reflexes in the affected limbs were increased, the plantar responses were extensor in seven cases, and there was ankle clonus in at least four.

Sensory Symptoms.—Only two cases showed no sensory impairment; the others showed, typically, impairment of postural sensibility and loss of tactile discrimination and localization. Subjective numbness and paraesthesia also occurred in two cases. There was loss of postural sensibility in eight cases; in seven of these it was the toes that were affected, in three the fingers, and in one case all the joints of one arm. The duration of the symptoms depended on the degree of injury.

In one case with a depression of the inner table just to the left of the midline for a distance of about 0.5 cm. symptoms consisted of impairment of joint sense in the toes of both feet and some diminution to light touch and pin-prick on the right side below the ankle and on the left on the outer border of the foot. At operation it was found that a small bone fragment had pierced the dura and was embedded in the top of the sensory cortex. It was removed, and eight days later there was gross diminution to light touch over both feet and loss of joint sense in the toes and fingers of both limbs. Joint sense at the knees appeared normal. Four days later sensory symptoms were normal except for slight diminution to light touch over the outer border of the left foot, and after a period of re-education in walking the patient appeared quite normal, with no physical signs. In more severe cases, however, loss of postural sensibility in the toes remained to add to the difficulty experienced in walking.

Lumbar Puncture.—This was performed in six cases, but only as a post-operative measure. The pressure was raised to above normal limits in only two cases, and in these it fell to normal within three and 14 days. This latter case, in fact, had a penetrating wound in the right mid-parietal region with in-driven bone fragments, and was the most severe case of cerebral injury in the series.

Urinary Disturbance.—Only two cases had any urinary trouble; one had a very mild degree of incontinence lasting a few days, and the other had a more prolonged period lasting several weeks.

Epileptic Attacks.—One case had a single focal epileptic attack which lasted for about 15 minutes on the day after injury and consisted mainly of flexion movements limited to the right fingers and arm. None of the cases have had any epileptic attacks for the four years for which they have been followed up.

Follow-up

Ten cases have been successfully followed up over the last four years. The only case lost sight of was one with very mild symptoms following a simple scalp laceration, and he was symptom-free six months after his injury. All the others had bony injury of varying degrees, and only two of these appear to be quite free from symptoms. One wrote in May, 1948, that he was "very well and quite normal in every way." The other has spent some time in prison for petty larceny and is considered physically fit by the authorities.

Thus while only two patients can be considered quite fit, seven of the 11 are able to earn their own living in some kind of work. One has a light job, five days a week, as a battery attendant. He is quite active, but one foot requires a calliper splint and the other, he writes, "gets stuck occasionally." He also suffers from headaches and is rather forgetful. He had a scalp laceration in the right parietal region running over the vertex and there was a small in-driven metal foreign body that was removed without trouble. His condition now appears to be stationary.

Another man has his own small business as a book seller. He had a severe injury with a midline laceration and a depressed comminuted fracture with penetration of the dura. His recovery was slow but steady; he can now walk unaided, but finds it difficult to tackle inclines owing to some spasticity of his foot. He also complains that if he puts his left foot down suddenly he gets a sharp pain as if he had trodden on a spike.

Another man has a sedentary job as an electrical instrument maker, and yet another has a like job with the Ministry of Supply. The former stated in January, 1947, that he could get about alone, but that he needed a stick in wet or slippery weather. He could move his toes freely up and down, but had not got normal easy movement in his ankle or knee.

Of the four who are still incapacitated two had penetrating wounds and two had severe depressed comminuted fractures. They differ from the others only in degree, their disability being due to an inability to walk unaided owing to weakness and spasticity of the lower limbs. One of these cases (Case 6) may here be summarized, as it well illustrates the march of events.

Report of Typical Case

Aug. 14, 1944.—Patient wounded by mortar bomb. Deep laceration of scalp, no obvious fracture. Comatose.

Aug. 15.—Conscious; dysphasic; responds to name and to pin-prick. Right arm, complete spastic paralysis. Legs: complete spastic paralysis, left more spastic than right; ankle clonus; extensor plantars.

Aug. 16.—Conscious; dysphasic. Right arm, spastic paralysis. Legs: complete spastic paralysis; extensor plantars. *X*-ray report: "An oval depressed fracture with much comminution of the depressed portion lying up alongside the midline in the mid-parietal region on the left side. From the lower part of the 5-cm. depression a fissured fracture runs downward on, I think, the left side of the skull to terminate in the roof of the orbit. Not much separation of the edges." *Operation*:—Removal of damaged bone together with fragments that had penetrated the dura and brain. Clot and necrotic brain sucked away and wound closed.

Sept. 6.—Very mild nominal dysphasia. Gives a clear account of his injury. Right arm: tone flaccid, with some finger movements and rotation of the elbow only. Posture sense impaired in the fingers. Legs: power good on the left except for dorsiflexion of the foot, which cannot be performed; on the right he can draw his leg up but cannot move the toes and cannot raise his leg off the bed; tone flaccid; ankle clonus; plantars equivocal.

Sept. 23.—Alert. Movements of right fingers, elbow, and shoulder returning. Movement improved in right leg.

Sept. 1, 1945.—Walking, but a tendency to fall.

Feb. 12, 1948.—Right arm: floppier than left; full range of active and passive movements, but these are slower and weaker than normal. Gripping of right hand is slow, and opening of hand is associated with flexion of wrist. No discrete finger movements possible. Falling away of outstretched right fingers and wrist. Legs: both legs "floppy," right more than left; he cannot evert his right foot and weakness of eversion on the left. Plantars extensor. Bilateral knee and ankle clonus. Loss of position sense in toes and inner three fingers of right hand and diminution of tactile discrimination at the ulnar border of right hand and wrist. He is reported as being a co-operative man who is learning to use his weak hand well and hopes to get placed eventually in a carpenter's shop.

In this case it was a full year before the patient was able to walk. The fact that he made such a good recovery was largely due to his own determination, reflected in his desire to perform work that required the use of his injured hand.

Discussion

A study of this series reveals that there is little to be added to the critical study of a series of similar cases made by Gordon Holmes and Sargent after the 1914–18 war.

The syndrome consists of a spastic paresis of characteristic distribution affecting one or more limbs and associated with cortical sensory loss in the same region. This clinical picture is the result of injuries in the region of the superior longitudinal sinus, and is remarkable particularly for the rapid, in fact, almost instantaneous, onset of the spasticity which accompanies the paralysis. This is especially emphasized in the present group of cases, for, owing to the rapidity with which cases were evacuated in this war, they were often in the hands of a neurosurgical team a few hours after injury. In addition, the injuries themselves were not of great severity in some cases, and consciousness was retained and a clear account of the injury and its effects could be obtained.

One man, for example, stated that a mortar bomb fell five yards (4.57 metres) away from him on the other side of a wall and that he was struck by fragments. He fell to his knees and could not get up. He was flown to England and was in a neurosurgical unit within eight hours. On examination he showed a very typical picture with no movement of either leg below the knee, although he could raise both legs off the bed. There was hyperaesthesia to light touch and pin-prick on the left leg below the knee and on the dorsum of the right foot. Reflexes were brisk and equal and there was ankle clonus with indefinite plantar responses. Loss of position sense occurred in the toes of both feet. *X*-ray examination revealed a metal foreign body situated just above the midline at the midpoint between the inion and nasion. Beneath there was a depression of the inner table for a distance of about 3 cm., the most marked depression measuring about 4 mm. The depressed bone was rongeured away, leaving a bone defect down the centre of which was running the longitudinal sinus, which appeared patent. He made a good recovery from the operation, and twelve days later the first flicker of returning power in the right toes was noted. His progress was slow, but a month later he was able to walk with assistance. His right foot recovered by the end of six months, but his left foot made no progress and was eventually fitted with a calliper. Two years later he was working and reported only occasional periods when his right toes "got stuck."

Another man sustained a tangential scalp wound while attacking a house. He fell down, but did not lose consciousness, and was able to crawl to cover. His complaint at that time was that his legs "felt heavy." The fingers of his right hand were also affected, and he complained later of transient attacks of blindness. The scalp wound ran from the left post-parietal region across the vertex to the right parietal region with depression of both tables extending across the mid-parietal region, the maximal depression being directly over the longitudinal sinus. This man made a steady recovery to full health.

These two cases illustrate the following points: (1) a relatively mild injury with no loss of consciousness; (2) the immediate onset of weakness and spasticity in the lower limbs; (3) the presence of bony depression in the immediate region of the longitudinal sinus; and (4) the slow and steady recovery over a long period, although in the second of these cases the depressed fracture was not elevated.

According to Gordon Holmes and Sargent the most striking pathological feature of these injuries is the firm swollen cortical veins which cannot be emptied by pressure, and the oedema of the area of cortex that they drain. Microscopically, there is oedema of the affected area, which is more prominent in the white than in the grey matter. Minute haemorrhages occur in the grey and white matter chiefly in proximity to the wound. The nerve cells in the affected areas show pronounced changes and are greatly swollen and in advanced chromatolysis.

It is thought that this clinical picture results from the situation of the longitudinal sinus near the site of the injury. The sinus undergoes some degree of thrombosis which causes the oedema and produces the associated pathological changes in the cerebral cortex.

Thrombosis is the natural response of a large vessel of this type to trauma in its vicinity, and it is possible that it occurs independently of changes in the cortex. For although the sinus was only specifically mentioned at operation in five of these cases, the impression gained was that it remained patent owing to the presence of trabeculae within its lumen.

Lumbar puncture was not performed before operation, but the pressure was not consistently high when it was done post-operatively. Headache was not a common symptom, and in fact only one man complained of it specifically. Neither did any case show changes in the optic fundi compatible with a persistently raised C.S.F. pressure, although this would depend to some extent on the site of the thrombus within the sinus.

Wounds of varying severity in this situation cause similar symptoms, differing from each other only in degree. For example, Case 1 sustained a scalp wound with no bony injury. Symptoms were limited to a slight loss of power and some subjective numbness in the left foot which passed off in five days. In the cases previously cited the symptoms persisted over years.

None of these cases showed the initial period of flaccidity which usually occurs in cases of cerebral damage, whether due to trauma or to vascular catastrophe, and which is thought to be due to shock. This persists normally in such cases for a period of about 10 days, and only then does spasticity begin to appear. Indeed, the very feature of these cases is the immediate appearance of spasticity.

Case 11 is interesting in this respect. This man sustained a penetrating injury close to the midline in the left parietal region. He presented a rather mixed picture of right hemiplegia, with a spastic paresis of the lower limbs. He had a right focal epileptic attack on the day following injury confined to his hand and arm. Operation involved removal of damaged brain tissue and of in-driven bone fragments in the left parietal region. He made a good recovery from a severe operation, and two days afterwards showed the following signs: complete flaccid paralysis of the right arm, and a flaccid paralysis of both legs, complete on the right and almost complete on the left. He showed, in addition, loss of joint sense of the ankles and toes and an extensor plantar response.

Eleven days after operation the following signs were observed: slight spasticity of the right upper limb with some movement now possible at the elbow and slight dorsiflexion and palmar flexion at the wrist. Grip good, but some difficulty in extension of the fourth and fifth fingers. In the lower limbs tone was increased on both sides, right slightly more than left. Power was improving in the left leg, which could be held off the bed and flexed at the knee; dorsiflexion and plantar flexion were just present and he could move the toes slightly on this side. On the right, paralysis persisted except for slight movement at the hip. Ankle clonus was ill-sustained and the right plantar was extensor. Three years later he was able to get about with the aid of sticks in wet and slippery weather and was earning his living. He considered that improvement was still continuing.

This case showed a stage of flaccidity occurring after operation, but eleven days later the picture of spasticity had again become apparent. It does seem, therefore, that the site of the injury in close proximity to the superior longitudinal sinus is responsible for this clinical picture; but

this does not explain why spasticity occurs at once, and indeed its occurrence is so immediate that it must be related directly to the injury rather than to the secondary pathological changes following a sinus thrombosis. In cases where operative procedure was necessarily severe a stage of shock and flaccid paresis did appear, but ten days or so after operation spasticity had again appeared, often together with the first signs of recovery.

Recovery begins early and continues for a considerable time—several years at least. Its degree depends upon the degree of injury, and if this is severe spasticity and weakness remain and recovery depends upon how much this can be overcome by re-education in walking and the use of appliances. The main difficulty that these patients experience is the negotiation of uneven surfaces and inclines that require the presence of unimpaired postural sensibility in the toes and the ability to dorsiflex and plantar-flex the foot accurately. In the early stages of recovery the gait may be likened to that of a patient suffering from Little's disease, but most cases appear to progress enough to afford adequate movement at the hips and knees, and the residual disability is confined in these cases to the feet and ankles.

Furthermore, although the series is small, the presence of other symptoms often associated with cranial injury do not seem to be of common occurrence—that is, such symptoms as headache, dizziness, or epileptiform attacks.

Summary

A series of cases of injury in the region of the superior longitudinal sinus is presented.

The clinical picture is described and the pathology briefly discussed.

Particular attention has been paid to the clinical progress of the cases and their condition up to four years after injury.

The very early occurrence of spasticity after the injury is also emphasized.

I should like to thank Mr. Wylie McKissock for permission to study and follow up these cases, and Dr. J. E. S. Lloyd for permission to publish this paper. I should also like to thank Miss Montgomery for her help in contacting the cases.

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Under the National Insurance (Overlapping Benefits) Provisional Regulations, 1948, certain reductions are made in the rate of benefit payable to in-patients who are maintained free of charge in hospital. These provisions have thrown into relief the question of the extent to which hospitals should provide their patients with the non-medical necessities of life and with minor luxuries. There are certain articles which the Minister considers should be provided as a matter of course for all patients who do not prefer to provide their own—such things as soap, tooth paste or powder, razor blades, sanitary towels or their equivalent, the services of a barber, a reasonable supply of notepaper on request, and a selection of newspapers and magazines in the wards (though not an individual issue). Other articles may be supplied to patients on loan—e.g., towels, hairbrushes, and combs, and, where necessary, night and day clothing. It is not easy to distinguish between essentials of this kind and minor luxuries, or, in other words, between what should be provided at the cost of the Exchequer and what may be provided from the committee's or board's free money; and the Minister leaves committees and boards a certain discretion in determining this issue. He considers, however, that hospitals should not provide as a charge on Exchequer funds such things as cosmetics, permanent waving, postage stamps, and tobacco or sweets. Where patients remain in hospital for a long time it is reasonable that the range of articles to be provided without charge and at Exchequer cost should be somewhat extended.

A CASE OF BILATERAL PHAEOCHROMOCYTOMA

BY

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Phaeochromocytomata are rare enough to warrant the recording of an additional case.

Case Report

The patient, a married woman aged 40, was admitted in October, 1946, complaining of generalized throbbing headaches for the past ten years. These were present by day and by night, but had increased in severity during the past two years. Sometimes after exertion or on stooping the headaches became very severe, spreading from the temporal and infraorbital regions to the vertex and occiput. These attacks lasted for two to three minutes, but the patient emphasized that she was never completely free from headaches. On moderate exertion she soon became breathless and suffered from palpitations. Weakness and loss of weight had increased, particularly during the three weeks before her admission. Her past history had been uneventful. Her family history was very interesting.

Her father died at 46 of Addison's disease, though its cause (atrophy, tuberculous infection, chromaffinoma) is debatable. Of six other siblings, one brother died at 28 of diabetes, while one sister died at 29 of an obscure bone disease. She was apparently healthy up to the age of 14, when she started to "shrink." At the time of her death her body was about the size of a child of 4. The condition was regarded as that of an "achondroplastic dwarf."

Physical Examination.—The patient looked very much older than her age. Pigmentations were not present on skin or mucous membranes. There were visible arterial pulsations in the anterior cervical triangles and in the suprasternal notch, and the apex beat was forcible. The pulse was regular, but there was a tachycardia of 140. The blood pressure was raised to 227/128. The blood urea was 65 mg. per 100 ml. Hyaline casts were constantly found in the urinary sediment, and a moderately large tumour which did not move with respiration could be felt in the right lower abdomen. Both fundi of the eyes showed sparse, scattered, superficial retinal haemorrhages of moderate size in the paracentral areas. One vein below the left optic disk appeared to be compressed by the overlying artery.

X-ray Examination.—The ascending pyelogram showed that the right kidney corresponded to the tumour felt by abdominal palpation and was found to be rotated forward, outward, and displaced downwards. Both kidneys were secreting. The left kidney was normal in appearance and position. Above the right kidney there was a dense shadow, and a new growth of the right adrenal gland was thought to be most likely.

A presumptive diagnosis of chromaffinoma of the right adrenal gland was made and operation was decided upon. Under N_2O–ether anaesthesia the right lumbar region was explored and a large adrenal tumour removed. During the operation it was noted that both pupils became maximally dilated as soon as the tumour was handled. Post-operatively the patient was immediately treated for shock, adrenaline was given, but in spite of this she did not rally and death occurred within 24 hours.

At necropsy the *left adrenal gland* appeared to be also grossly enlarged, weighing 40 g. In parts the usual shape of an adrenal gland was still recognizable, but a large round tumour mass occupied the central portion of the gland. On sectioning, normal yellow cortical tissue was only sporadically recognizable. For the greater part the whole organ and round mass consisted of soft yellowish or dark brown jelly-like material. The *right*

adrenal gland, removed at operation, weighed 325 g. and consisted of two distinct masses, held together by a flat, broad pedicle. The smaller of the two, still resembling in shape an adrenal gland, measured 6½ by 4 by 3½ cm. The larger mass was oval, measuring 10½ cm. across and 7½ cm. in width. The tumour was surrounded by a thin fibrous capsule and was moderately firm. On sectioning, the cut surfaces were whitish or yellowish brown in colour, but there were many areas of haemorrhagic infiltration as well as areas of cystic degeneration.

Microscopically both tumours appeared to be composed of strands and masses of fairly large somewhat pleomorphic cells, possessing an oval or round vesicular nucleus, displaying a delicate chromatin network and exhibiting a distinct nucleolus, surrounded by a fair rim of basophil cytoplasm, and often forming syncytium-like complexes. They were supported by scanty stroma and often surrounded blood sinusoids. At the periphery the tumour cells occasionally resembled normal adrenal medullary tissue. They stained dark brown after fixation in potassium bichromate solution. The diagnosis was chromaffinoma.

Discussion

Phaeochromocytoma, or chromaffinoma, is a comparatively rare tumour. Up to 1946 about 176 had been recorded, of which only 47 showed hormonal activity (Calkins and Howard, 1947). Among these there were 16 bilateral growths (Mackeith, 1944), so that the present case is probably the 17th.* Every year several new cases are recorded (Espersen and Dahl-Iversen, 1946; Washington *et al.*, 1946; Blacklock *et al.*, 1947; Brunschwig, 1947; Goldenberg *et al.*, 1947; Gutmann, 1947; Kipkie, 1947; Mandl, 1947; Schneider, 1947; Spalding, 1947). The symptoms, though essentially those of hypertension due to an excess of adrenaline production, may vary, and some authors distinguish four clinical groups: (1) paroxysmal hypertension, (2) persistent hypertension, (3) asymptomatic, and (4) malignant. A fifth and very rare manifestation is Addison's disease due to compression of the adrenal cortex by the new growth. In addition to the signs and symptoms of hypertension, including haemorrhages in the eyes and partial or complete compression of the retinal veins by their corresponding arteries, anaemia, loss of weight, lassitude, insomnia, fibrillation, and hyperglycaemia and glycosuria have been observed.

Chromaffin tumours may arise from chromaffin tissue throughout the body, but do not appear to give rise to clinical symptoms unless situated in or in close proximity to the adrenal glands (Mackeith, 1944).

Apart from the history and abdominal palpation, *x*-ray examination is of help in diagnosis. Tomography revealed the presence of a growth in one case (Mandl, 1947). Perirenal insufflation of air is recommended by several authors. A rise of the serum potassium during hypertensive paroxysms was described by Blacklock *et al.* (1947), while others found an increased content of adrenaline during the attacks (Beer *et al.*, 1937; Strömbeck and Hedberg, 1939).

Recently two new tests have been devised which may prove most helpful in diagnosing the condition. Goldenberg *et al.* (1947) postulated that in a case in which hypertension is due to an increased amount of adrenaline it will be abolished or significantly decreased by the intravenous administration of adrenolytic compounds. But if hypertension is due to any other cause it will persist. The two adrenolytic benzodioxanes they employed (933 F: piperidylmethyl benzodioxane; and 1164 F: 2,4-dimethyl-piperidylmethyl benzodioxane) were injected in a dosage of 0.2–0.25 mg. per kg. of body weight, and proved their assumption right. The injections were followed by a *fall* in blood pressure of about 50 mm., which effect lasted for about 15 minutes—a reaction which proved to be specific for an increase of adrenaline in the circulation.

The second test was developed by Roth and Kvale (1945), based on experiments by Hyman and Mencher (1943), who also claim that their test is specific for the condition. The intravenous injection of 0.025–0.05 mg. of histamine in 0.025–0.05 ml. of saline into patients suffering from a chromaffinoma was followed immediately by a *rise* in blood pressure of about 100 mm. or more, accompanied by the subjective sensations of a typical attack of hypertension. Though one might be tempted to explain this phenomenon as the reaction of the body to a vasodilator, this is apparently not the mechanism, as dilatation of vessels as such does not produce a similar reaction. Hyman and Mencher's theory is that the drug exerts an immediate action on the tumour cells, causing them to shed their hormone into the blood stream.

Up to date no medical treatment of the condition is available, unless the observation by Espersen and Dahl-Iversen (1946) can be corroborated. They treated one of their cases pre-operatively with methylthiouracil, which resulted in complete disappearance of the paroxysmal attacks of hypertension.

The new growth has been attacked over 50 times, and in many cases successfully, by surgical intervention. The most critical period is the first 24 hours after operation. Many substances have been advocated to combat the ensuing shock, of which adrenaline in large doses proved the most successful (Biskind *et al.*, 1941).

Calkins and Howard (1947) described the first two cases of familial bilateral phaeochromocytomata, occurring in a woman and her niece. They were of the opinion that there is every likelihood that the mother of the latter also died of the same disease. A remarkable incidence of goitre was shown to exist in this family. In this connexion it may be stressed that the family of our patient also showed evidence of endocrine imbalance, but none of its members suffered from thyrotoxicosis.

We gratefully acknowledge our indebtedness to our colleagues, Drs. Hale, Hair, and Heath, for permission to make use of their case notes.

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*A further case of bilateral chromaffinoma, occurring in a child, was demonstrated by Dr. H. S. Baar at a meeting of the Association of Clinical Pathologists, held at St. Mary's Hospital on Jan. 23 and 24, 1948.

The Minister of Heath is considering the question of the recruitment and training of matrons and assistant matrons in homes for old or infirm people provided by local authorities and voluntary organizations under the National Assistance Act, 1948. The Ministry announces that the National Old People's Welfare Committee will hold a course on Sept. 11–17 for training existing staff and with a view to selecting suitable matrons with whom future students might be placed for training. Inquiries should be made before July 5 to the secretary, National Old People's Welfare Committee, 26, Bedford Square, London, W.C.1.

SPONTANEOUS CIRCUMRENAL HAEMATOMA

A REVIEW AND REPORT OF TWO CASES

BY

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The term "spontaneous circumrenal haematoma" is self-explanatory and excludes, by definition, cases of traumatic origin. The condition is said to be a rare one, though I have had to deal with two cases in the past nine years. These two cases and a short review of the subject are thought to be worth publishing, as no mention is made of the condition in most of the standard surgical textbooks, and no description of it had appeared in any English journal until that of Heritage in 1934. The condition is referred to by Hamilton Bailey (1944) and in American papers under the title of spontaneous perirenal haematoma. At risk of seeming pedantic, however, the Graeco-Roman bastardy of the word "perirenal" should condemn it. The condition is probably not as rare as the literature would suggest; it may possibly be the underlying lesion in such labels as "retroperitoneal sarcoma" and "retroperitoneal haematoma of obscure aetiology."

Case 1

A youth aged 18 was suddenly taken ill at sea with abdominal pain and vomiting on Nov. 14, 1945. There was no history of trauma. Next morning his condition was worse. He had a furred tongue and a weak thready pulse of 130; his temperature was 103° F. (39.4° C.). There was extreme tenderness and rigidity in the right loin and right iliac fossa. Examination of the urine, including centrifugalization and microscopy, was negative.

A diagnosis of retrocaecal appendicitis with generalized peritonitis was made; he was shipped ashore and admitted to the Calvary Hospital, Hobart, Tasmania. He was seen by two surgeons, who agreed with the diagnosis, and immediate operation was undertaken.

At operation the appendix was normal, but a large retroperitoneal haematoma, which appeared to surround the kidney, was found in the right paracolic gutter. The incision was extended and the swelling was being explored further when the anaesthetist reported that the patient was *in extremis* and the abdomen had to be quickly closed. He was given a blood transfusion of 4 pints (2.2 litres) and his condition improved considerably. Ten hours after the first operation the wound was reopened. This approach, rather than a lumbar incision, was chosen to enable the presence of a left kidney and its condition to be ascertained. The ascending colon was mobilized, and after mopping out blood clot a transperitoneal nephrectomy was carried out. After this operation he made a rapid and uninterrupted recovery.

Pathological Report.—"The kidney is lobulated, resembling the foetal type, with dilated pelvis and calices. No visible inflammatory reaction in the pelvic cavity. A haemorrhagic area over the hilum shows only a layer of tissue between the pelvis and the exterior. Sections show widespread interstitial nephritis, with areas of small round-cell infiltration scattered through the renal tissue. At the site of haemorrhage there is complete replacement of the renal tissue by inflammatory scar tissue."

Pyelograms, taken two and six months after operation, showed a large left kidney and large pelvis with good secretion. Now, three years after, the patient is perfectly fit and still serving as a regular officer in one of the armed Forces.

Comment.—The points of interest are: (1) this was a case of spontaneous circumrenal haemorrhage, probably secondary to a congenital hydronephrosis in a foetal-type kidney; (2) it presented as an acute surgical emergency, and was diagnosed by three surgeons as acute appendicitis with generalized peritonitis; (3) the urine contained no red blood cells; and (4) uninterrupted recovery followed nephrectomy.

Case 2

A man aged 35 was admitted to Worthing Hospital on June 21, 1948, complaining of abdominal pain and backache for 24 hours. The pain seemed to come from the right loin and was maximal in the right iliac fossa. There had been no vomiting and no central pain, but his abdomen felt distended. Bowels and micturition were normal. He had had amoebic dysentery in 1942, with recurrences in March and September, 1943. There was no history of recent trauma.

On examination he was obviously ill and in pain. His temperature was 100° F. (37.8° C.), and pulse 92. The tongue was furred. Localized tenderness and guarding were present in the right iliac fossa, over McBurney's point and extending up into the loin. There was guarding of the lumbar muscles, but no abdominal rigidity. Considerable meteorism was noted. The liver was not enlarged, and neither kidney was palpable. Peristaltic sounds were normal. Rectal examination revealed no tenderness. The heart sounds were normal. The blood pressure was 150/95. An occasional leucocyte and some ammonium urate crystals were found in the urine, the pH of which was 6. No red blood cells or casts were seen. There was no growth on culture for 24 hours. A blood count showed: haemoglobin, 80%; red cells, 3,610,000; colour index 1.11; white cells, 14,800 (90% polymorphs); blood urea 46 mg. per 100 ml. Amoebae were not seen in one specimen of faeces. Two hours later his condition was worse and operation was advised. The pre-operative diagnosis was retrocaecal appendicitis, ? amoebic perityphlitis.

Operation.—Through a right paramedian incision I found that the caecum was ballooned and the small bowel distended with gas. The appendix was normal. A large retroperitoneal haematoma involved the posterior aspect of the caecum and ascending colon. It filled the right paracolic gutter, extended over the brim of the pelvis, and seemed to originate from the kidney, which was large but smooth. There was no evidence of amoebic colitis. The abdomen was closed. The anaesthetist noted that the blood pressure was 180/100. This hypertension persisted post-operatively.

Post-operative Course.—This was marked by progressive vomiting and abdominal distension. His blood pressure remained high. He developed a classical adynamic or neurogenic ileus, which failed to respond to continuous gastric suction and intravenous therapy. His condition slowly but inexorably deteriorated until death supervened on the eleventh post-operative day.

Necropsy.—A large unorganized clot surrounded the right kidney and stripped up the peritoneum. Both kidneys and suprarenals appeared normal. There was no evidence of active amoebic disease, and the liver was normal.

Microscopical Report (Dr. Standish).—"There is no microscopical evidence of haemorrhage in the suprarenals, and their vessels show no evidence of either endarteritis or polyarteritis nodosa. The surrounding blood clot shows a very early stage of organization, but no inflammatory change. There is no evidence of the cause of the haemorrhage either in the suprarenal or in the clot itself."

Comment.—(1) The hypertension found at operation and afterwards was an interesting phenomenon and one which has not, so far as can be ascertained, been noted before in the literature. The patient's general practitioner, Dr. Shepherd, told me that he had found the blood pressure normal at several previous examinations. The cause of this is presumably compression of the renal parenchyma by clot, and is analogous to the hypertension produced experimentally by Page (1939) and Graef and Page (1940). These workers were able to produce a sustained hypertension in dogs from perinephric scarring by silk or from compression of the kidneys by wrapping "cellophane" round them.

(2) The cause of death was adynamic ileus, due again, presumably, to irritation of the aortico-renal plexus by clot. I was satisfied at necropsy that there was no mechanical obstruction to the second part of the duodenum by the haematoma itself—an explanation which had been suggested. Some degree of meteorism is, of course, common after nephrectomy. It is my impression that a greater degree of ileus is found after a right nephrectomy than after a left; but this is only an impression, and I am not aware that the matter has been investigated.

Discussion

Aetiology

Polkey and Vynalek (1933), of Chicago, have written the fullest review of the literature up to 1933 and collected 178 cases, mostly from Continental writers. They suggested that "sudden renal congestion" might explain some of the spontaneous cases in which no cause was discovered. In experiments on dogs they ligated the renal vein with silk thread and found subcapsular haemorrhage in 33%, extracapsular haematoma in 42.8%, and some degree of parenchymal haemorrhage in 100%.

I have found a further 13 cases reported in the literature in the last 15 years. The pre-operative or clinical diagnoses of these cases, together with those of my own two, and the stated causes and results of treatment, are shown in the accompanying Table.

Spontaneous circumrenal haematoma must be regarded as a symptom-complex or complication and not as a disease entity. It follows that the lesions responsible for it are numerous. They fall into three main groups—renal, extrarenal, and the blood dyscrasias.

Group 1: Lesions of the Kidney and Suprarenal Gland.—A lesion of the kidney or suprarenal accounts for about 60% of cases. Nearly every lesion affecting these organs has been reported—renal and suprarenal cysts and tumours, chronic nephritis, hydronephrosis, aneurysm of the renal artery, lithiasis, tuberculosis, and thrombosis of the renal vein. Usually the haemorrhage is the precipitating symptom, with no previous history pointing to renal disease. Thus in one of Heritage's cases it was only with difficulty and after microscopical examination that "ghost cells" of a haemorrhagic and necrosed neoplasm were found in the clot.

Group 2: Extrarenal Retroperitoneal Lesions.—Included in this group are such differing conditions as perinephritis, arteriosclerosis, aneurysm of the abdominal aorta, and hypertension. One case was associated with periarteritis nodosa.

Group 3: The Blood Dyscrasias.—Haemophilia, polycythaemia, leukaemia, scurvy, thrombocytopenic purpura, and Hodgkin's disease have all been reported.

Clinical Course

Clinically one must distinguish between the acute and the chronic form of the disease. The acute form is by far the more common. The onset is sudden and dramatic and presents as an acute surgical abdomen. There may be no history suggesting renal disease. The classical findings are the triad of pain, a renal tumour, and signs of internal haemorrhage (Lenk, 1909), but these are seldom all present. The muscular rigidity usually precludes the palpation of a renal tumour in the acute form of the disease. Pyrexia is due to blood absorption, and pressure on the renal parenchyma may cause albuminuria or hypertension. Later, increasing abdominal distension, vomiting, and prostration confuse diagnosis and suggest the perforation of an abdominal viscus. In fact, the haematoma may perforate the peritoneum and give a clinical picture very similar to that of a "ruptured ectopic," but in a male.

A more insidious form of the disease occurs with a sense of fullness or discomfort in the affected loin. Here there is time for investigation. A renal tumour can as a rule be felt and the diagnosis is usually hydronephrosis or hypernephroma. Careful study of pyelograms, as Ekman (1946) has pointed out, will show displacement of the kidney: the direction of displacement may indicate the location of the source of the haemorrhage.

The only reported cases in which correct pre-operative diagnoses were made are described by Cibert, Vachon, and Cavailher (1942). In all these cases a tender tumour in the loin was present. The cases were of the insidious or chronic form and they all presented a similar physical sign, not previously described in the literature. This consisted of a lumbar ecchymosis, which in time tracked down to the scrotum. This ecchymosis, when present with a tumour in the loin and in the absence of trauma, is pathognomonic of spontaneous circumrenal haematoma.

Treatment

Where the condition is suspected emergency intravenous pyelography should be undertaken. It is essential to confirm the presence, and preferably the normality, of the opposite kidney. To quote the words of Cibert, Vachon, and Cavailher: "La conclusion, exprimée par tous les auteurs, découle de cette constatation: l'opération s'impose." Non-operative treatment was uniformly fatal in every published case, except one. It must be accepted, however, that the diagnosis is usually made with certainty only at operation or post mortem. Nevertheless, operation should be advised as soon as the necessary resuscitation has been undertaken, for three reasons: (1) to arrest haemorrhage and save life; (2) to prevent the side-effects of a large haematoma—meteorism, ileus, hypertension, sepsis, and possible rupture into the general peritoneal cavity; and (3) to explore what may well prove to be a malignant condition of the kidney or suprarenal gland.

In theory it might occasionally be possible, in the extrarenal type of haematoma, to clear out the clot and ligate the bleeding vessel. According to the literature this never seems to have been done. If the haematoma appears to have originated from the kidney, nephrectomy should be carried out. If bilateral renal disease is suspected or proved it might be wiser to rest content with packing or drainage. If both kidneys appear normal and no cause is apparent the best results seem to follow nephrectomy.

As the Table shows, seven out of 15 cases were subjected to nephrectomy without a death.

Table showing Cases Reported in the Last 15 Years

Author	Sex and Age	Clinical Diagnosis	Cause	Treatment	Result
Polkey and Vynalek (1933)	F. 39	Ovarian cyst	Unknown	Drainage	Recovery
Heritage (1934)	M. 51	P.D.U.	Neoplasm	Packing	,,
,, ,,	M. 65	P.D.U.	Suprarenal neoplasm	Laparotomy	Death
,, ,,	M. 41	Acute cholecystitis	Unknown	Drainage	,,
Carver (1939)	M. 43	Hydronephrosis	Hydronephrosis	Nephrectomy	Recovery
,, ,,	M. 47	?	Hypertension	Nil	Death
Elmer and Wyngarden (1939)	F. 46	Hypernephroma	Unknown	Nephrectomy	Recovery
Duro and Todd (1941)	F.	Retroperitoneal cyst	,,	,,	,,
Cibert, Vachon, and Cavailher (1942)	M. 51	Circumrenal haematoma	,,	,,	,,
,, ,,	M. 61	,, ,,	Suprarenal cyst	,,	,,
,, ,,	M. 58	,, ,,	Chronic nephritis	Expectant	,,
Ekman (1946)	M. 78	Appendicitis	Unknown	Laparotomy	,,
,, ,,	M. 48	Hypernephroma	Hypernephroma	Nephrectomy	,,
Martin	M. 18	General peritonitis	Hydronephrosis	,,	,,
,,	M. 35	Appendicitis	Unknown	Laparotomy	Death

Summary

The condition of spontaneous circumrenal haematoma is described, with two personal case histories.

Though rare the condition is an important one to bear in mind, as it may enter into the differential diagnosis of the acute abdomen and if treated expectantly is nearly always fatal.

The aetiology and clinical course are discussed. An acute and a chronic form can be distinguished.

Treatment should consist in surgical intervention and, in most cases, nephrectomy.

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APLASTIC ANAEMIA FOLLOWING NEOARSPHENAMINE

BY

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Aplastic anaemia is a well-recognized but rare complication of organic arsenical therapy. Wintrobe (1946) states that fewer than 100 cases have been reported in the literature, also that less than one-half of the cases described showed complete aplasia of the marrow. Recovery after complete aplasia has been recorded, however (Wintrobe, 1946). The case described below, which exhibited anaemia, leucopenia, thrombocytopenia, and a completely aplastic marrow on sternal puncture, seems to fall into this class and to be worthy of record.

Case Report

The patient, a man aged 52, contracted primary syphilis and gonorrhoea abroad in June, 1946. He received 37 injections of neoarsphenamine and 37 of bismuth during the next nine months.

He noticed nothing abnormal until April, 1947, when he had a severe epistaxis lasting 16 hours. The red blood cells numbered less than one million. Injections were stopped, but a month later further severe nose-bleeding occurred, with the appearance of petechiae and "papules" on the arms and legs. His haemoglobin was 30%; colour index, 1; red blood cells, 1,500,000 per c.mm.; white blood cells, 3,000 per c.mm. (L. 78%, M. 1%, P. 21%); platelets, 25,000 per c.cm.; coagulation time, 14 minutes. Wassermann reaction and Kahn test were negative. The spleen was never palpated.

He was treated with iron, a fresh blood transfusion, and 10 ml. of pentnucleotide every 12 hours. He received altogether some 6 pints (3.4 litres) of fresh blood. Four days later a blood count showed: red cells, 1,670,000 per c.mm.; haemoglobin, 30%; colour index, 0.9; bleeding time, 3½ minutes; coagulation time, 6 minutes; leucocytes, 2,000 per c.mm. (L. 73%, N. 2%, E. 3%, P. 22%).

He then returned to England, and during the voyage was given 1 ml. of "hepastab" daily, 45 gr. (3 g.) of iron and ammonium citrate, and 5 mg. of folic acid thrice daily. On his return he stated that he did not feel very ill, but became giddy and tired on the least exertion. Up to this time he had had 11 blood transfusions in all, the last being on May 19. No further epistaxis had occurred, but he had noticed some oozing of blood from his gums and he found that he bruised easily and "came out in little red spots." Previous illnesses and family history revealed nothing relevant.

He was admitted to hospital under our care on May 31. He was a very co-operative man, very pale, and obviously grossly anaemic. His skin was sallow and sunburnt. There was pronounced foetor oris; his teeth were in a bad condition, with much dental sepsis; the gums were soft and spongy, with pus oozing from them. The tongue was furred but moist. No bismuth line was present. No glands were palpable and no petechiae or bruises were seen. Over his legs and feet the skin was scaly, pigmented, and ulcerated. The blood pressure was 120/60. A soft systolic murmur was present over all areas in the praecordium. The capillary resistance test was strongly positive in three minutes at a pressure of 90 mm. Hg. Nothing abnormal was detected in the chest apart from an occasional rhonchus at the bases. The spleen was not palpable.

The pupils reacted normally to light and to accommodation. Ophthalmoscopy showed normal optic disks. No exudates were seen, though multiple large haemorrhages were present in both retinae. The central nervous system was otherwise normal.

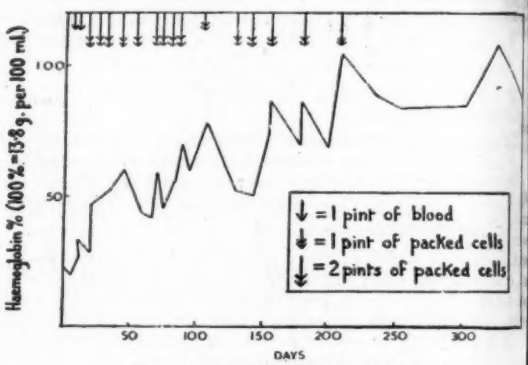

Chart showing haemoglobin findings

The diagnosis of aplastic anaemia due to arsenical therapy was made. The haemoglobin findings are shown in the accompanying graph. Radiographs of lungs and tibiae were negative. The B.M.R. was 4%.

The patient was kept in hospital until Sept. 16, when he was discharged home. During this time his haemoglobin rose from 20% to 104%. A total of 2 pints (1.14 litres) of whole blood and 29 pints (16.5 litres) of packed red cells was given over this period. He did not react adversely to any transfusion, and over the whole period made slow but steady improvement. Penicillin was administered, 40,000 units four-hourly, for the first month, the dosage gradually being reduced over the following three months to 100,000 units twice daily. Liver extract was given by injection (hepalon) 2 ml. daily at the onset, being reduced to twice a week after two months. He also received pyridoxin 100 mg. daily, ferrous sulphate 10 gr. (0.65 g.) thrice daily, two multivitamin tablets thrice daily, and folic acid tablets (15 mg.) daily.

On Oct. 2, 14, and 27 he was readmitted for the transfusion of 2 pints (1.14 litres) of packed cells on each occasion. The condition of the skin of the feet and legs greatly improved, and the capillary resistance test, still positive on Oct. 14, became negative after this time.

Two further pints of packed cells were given on Nov. 20 and Dec. 18. It was apparent at this time that he was making steady progress, and that he was beginning to pick up on his own. He was last seen on May 31, 1948, when he was in excellent general condition. The Wassermann reaction and Kahn test were negative. Our last report, received from abroad in October, 1948, was that he was in perfect general health and had received no further treatment.

Haematological Findings.—On June 2, 1947, these were as follows: haemoglobin, 22% (3.03 g.%); red cells, 1,210,000

per c.mm.; colour index, 0.9; white cells, 900 per c.mm. lymphocytes 80% and neutrophil polymorphs 20%, approximately). No red cell abnormalities were noted. On June 3 the bleeding time was longer than 10 minutes, the clotting time (venous blood) 11 minutes, the prothrombin time 11 seconds (normal, 8 seconds); blood platelets, 3,400 per c.mm.; reticulocytes were not found. The blood was Group O (IV) Rhesus-positive.

Table showing Results of Sternal Punctures

Date	June 3, 1947	Aug. 16, 1947	May 21, 1948
Total nucleated count	3,400 per c.mm.	10,200 per c.mm.	25,000 per c.mm.
Myeloblasts	—	0·4%	1·2%
Promyelocytes	1 seen in 3 films	0·6%	0·8%
Neut. myelocytes	" "	6·8%	9·2%
Neut. metamyelocytes	—	3·4%	8·6%
Neutrophils, segmented	Present	15·0%	24·2%
Eosin. myelocytes	—	1·4%	0·2%
Eosinophils	—	1·0%	0·6%
Basophil myelocytes	—	—	—
Basophils	—	—	0·2%
Lymphocytes	Present	32·0%	29·0%
Monocytes	"	3·2%	2·0%
Megakaryocytes	—	0·2%	Present—mature forms found
Haemocytoblasts	—	1·4%	0·2%
Normoblasts, basophil	1 seen in 3 films	6·8%	2·6%
Normoblasts, polychromatic	—	21·0%	19·8%
Normoblasts, orthochromic	—	6·2%	1·0%
Myeloid: erythroblast ratio	—	1 : 1·6	1·87 : 1
Miscellaneous cells	—	0·4%	0·4%
Naked eye	A fatty fluid	A fatty fluid	Marrow particles very evident

The sternal puncture findings are presented in the accompanying Table. They show a progressive return of cellularity from a condition of almost complete aplasia.

Haematological Progress.—The neutropenia persisted until May 18, 1948, when for the first time the neutrophil polymorphs amounted to more than 2,000 per c.mm. Reticulocytes were not found in any numbers until Feb. 2, 1948, when they totalled 5% of 3,800,000 red blood cells per c.mm. (190,000 per c.mm.). The platelet count did not rise to normal figures until after Feb. 24, 1948, when it was 40,000 per c.mm. On May 21, 1948, the platelet count was normal.

Discussion

It is of interest to note that the last cell series to recover completely in the circulating blood was that of the neutrophil polymorphonuclears. Neutropenia persisted from April, 1947, to May, 1948—a period of 13 months. Reticulocytes did not appear until after nine months of treatment, and platelets returned to normal only after a full 12 months. The capillary resistance test remained positive for seven months. It was felt that, of all the therapeutic agents given, penicillin and blood transfusions were the most important. The former totalled some 35 mega units, administered over a four-months period. The condition of the mouth and legs gave cause for anxiety in the early months, but about the end of the sixth month of the disease a gradual improvement became apparent.

Summary

A case of aplastic anaemia following neoarsphenamine administration is described. Depression was present in all marrow elements—a condition of almost complete aplasia. Recovery was complete after 13 months.

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The Ministry of Health states that hospitals may provide clothing for those "up" patients unable to provide it themselves and who are not obtaining it from other sources such as voluntary organizations. They would normally be long-stay ambulant patients. The patients may retain this clothing after discharge from hospital if the hospital is satisfied that the patients need clothing and are unable to obtain it from their own resources and without help.

HISTAMINE HEADACHE*

BY

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Headache is the most frequent complaint encountered in medical practice. It presents no diagnostic problem: the diagnosis is made by the sufferer. But the doctor must know the cause if he is to treat the patient efficiently.

Table I classifies the forms of headache that I have treated. The present paper is concerned mainly with the type of headache due to histamine, as described by Horton in 1941.

TABLE I.—*Results of Treatment by Histamine*

	Histamine Headache	Migraine	Psychical Headache	"Relaxation" Headache	Alcoholic Headache	Headache Associated with Hypertension	Headache with Organic Basis	Total	Controls without Headache
Complete cure	29	2	2	2	1	2	2	40	Slight or no reaction
Considerable improvement	8	1	2	1	1	2	2	16	
Some improvement	6	2	2	0	0	0	1	11	
No change	2	3	2	0	1	0	5	13	
Total	45	8	8	3	3	3	10	80	10

Clinical Features and Aetiology

Vallery-Radot in 1925, Brickner-Riley in 1935, and Money in 1939 described cases of atypical migraine which seem to be similar to the histamine headache described by Horton. It was Horton, however, who first described the syndrome, made the aetiology clear, produced the same symptoms experimentally, and outlined the method of treatment.

The characteristic symptoms of histamine headache, the frequency of which is shown in Table II, are as follows: it occurs in paroxysms, is unilateral, and is confined to a circumscribed area; on the same side there is congestion of the nasal mucous membrane; attacks frequently come on at night, and the patient often rises in the morning with headache. It is neither hereditary nor familial, has no connexion with menstruation or ocular disturbances, and is unassociated with vomiting. The condition is resistant to all treatment. In these patients headache produced by the injection of histamine is of the same type as occurs spontaneously.

As to the aetiology, it must be presumed that the accumulation of histamine produces an upset in cell metabolism. This accumulation is the result either of overproduction of histamine or of the inhibition of the destructive factor. It is also possible that individual hypersensitivity plays a part in cases in which the production of histamine is normal. According to Horton, in histamine headache the symptoms are caused by dilatation and constriction of the external and common carotid arteries. On the other hand, Wolff, Schumacher, Clark, Butler, Shuterland, and Pickering have proved, on the evidence of many cases, that the internal carotid is responsible for the quality and the intensity of histamine headache, and that the dilatation of the external carotid is of decisive importance in migraine. They demonstrated with photographs, taken during headache produced by the injection of histamine: (1) the amplitude of intracranial pulsation (which is increased); (2) the

*A paper read at the International Congress of Medicine held at Budapest in September, 1948.

TABLE II.—*Typical Symptoms of Histamine Headache*

	Histamine Headache	Migraine	Psychical Headache	"Relaxation" Headache	Alcoholic Headache	Headache Associated with Hypertension	Headache with Organic Basis	Total	Controls without Headache
No of cases	45	8	8	3	3	3	10	80	10
Age	16–60	24–36	20–32	28–59	36–41	49–57	24–37		
Duration	2 months–30 yrs	2–10 years	1 month–1 year	1–6 years	1–2 years	1–2 years	3 months–1 year		
Unilateral	26	5	2	1	1	1	3		
Localized	11	3	6	2	2	2	3		
Generalized	8						4		
Temporal	8	5	2	1		1	2		
Frontal	12	3		2	1		4		
Parietal	14								
Occipital	7								
Vertebral	4								
Paroxysmal	19	8					2		
Nocturnal	16								
Diurnal	29								
Stationary	10		8	3	2	2			
Watering of eyes	12								
Congestion of nasal mucous membrane	16								
Vomiting	2	5			2				

arterial blood pressure ; (3) the pressure of the cerebrospinal fluid ; and (4) the degree of pulsation in the temporal artery.

Increase in the intracranial pressure reduces the pain in histamine headache by providing counter-pressure to the dilated arteries, signifying that the dilatation of these arteries plays a part in the production of this type of headache. In migraine, however, this procedure has no influence on the headache, a fact which implies that dilatation of the extracerebral arteries is the basis of the condition.

Horton noted that repeated administration of the same dose of histamine could produce a progressively diminishing headache ; that is to say, the tolerance of the patient for histamine had increased. These observations led him to try desensitization. The term "desensitization" is used here in its widest sense. The desensitization is non-specific, because specific hypersensitivity is not the aetiological factor and there are symptoms of neither hypersensitivity nor of allergy. But the favourable effect of a long course of small doses demonstrates that the therapeutic effect is in the nature of a desensitization.

It is accepted that, although differing greatly from adrenaline and the choline derivatives in nature and origin, histamine will probably take its place with them among the most important hormones in animal life. Dale and de Krogh have explained the role of histamine in capillary vasodilatation and the regulation of blood pressure. Later, in 1947, Emmelin and Feldberg observed that histamine was a physiological antagonist of adrenaline. So far as we know, histamine is a breakdown product of tissue proteins, which produce an acid of which histamine (β-iminazolylethylamine) is the amine. The release of this amine occurs in shock due to anaphylaxis, trauma, and other causes. The liberation of histamine may be local.

An interesting question confronts us: Why should a symmetrical system respond with pain which is asymmetrical, unilateral, and localized ? It must be presumed that some unknown mechanism makes this possible. The resistance of the arteries to histamine may become less in a circumscribed region and the dilatant effect produced at this point, or some arterial lesion in this area may bring about a local liberation of histamine.

Treatment

In the neurological department of the Szent István Hospital, under Professor Lehoczky, I have treated 90 patients with histamine. They had headache of long duration—between two months and 30 years—which was resistant to all treatment and made them incapable of any work. I have followed up the cases for six months, either by personal contact or by correspondence.

I first gave each patient a test dose of 0.3 mg. of histamine subcutaneously. The local reaction appeared in the form of a red urticarial weal with a surrounding areola of vasodilatation. After several seconds flushing of the face, neck, and chest, and tachycardia occurred ; a few minutes later a localized headache began in the usual site. This reaction could be reproduced exactly in all cases of histamine headache. In atypical cases a stronger dose of histamine was necessary to produce the same reaction. In ten control cases not suffering from headache the injection caused a feeble reaction or no response at all, in two cases resulting in only a mild headache, which disappeared in a few minutes.

The symptoms generally continued for from ten minutes to three or four hours. The next day I began desensitization with an injection of 0.1 mg of histamine subcutaneously, and continued the treatment on the following day according to the reaction to the preceding dose. If the headache, tachycardia, and rise in blood pressure were too severe I reduced the dose. Tolerance increased after the first three or four injections, and I therefore progressively increased the daily dose to 0.2 mg. There are recorded in the literature intradermal and intravenous treatments with various solutions of histamine in extremely high dosage for periods of two to three months, but with my method I obtained the same results in less time (Table II).

Case Reports

The following cases illustrate the course of treatment.

Case 1.—A woman aged 48, suffering from headache for thirty years, which was always confined to the frontal region of the right side. She had had several courses of treatment without result. After *x*-ray examination the headache was attributed to osteitis of the frontal bone. The patient came to me in a state of depression and was unable to work because of the very severe headache. After the first four injections the headache ceased. She received ten further injections. Five months after the treatment was finished the headache had not returned.

Case 2.—A woman of 24, suffering for six years from headache which was becoming more and more severe. It was always situated in the right temporal region and on the crown. She had to get up five or six times during the night because of the headache. The attacks often occurred during the daytime and were accompanied by nasal obstruction and watering of the eyes. At the site of the subcutaneous injection there was a local reaction. One or two minutes afterwards she experienced a headache corresponding exactly to her spontaneous attacks. After ten injections she could leave hospital. She has since informed me that she no longer suffers from headache.

Case 3.—A woman aged 49 had had headache since the birth of her son, who is now 28. This was not precisely the type of headache associated with histamine. The pain was stationary and made her incapable of work. She tried several treatments in vain and was driven to ideas of suicide. After the first in

injections she had no more headache. She received one injection a day during the next two weeks, and her previous complaints—loss of appetite, depression, fatigue, and vertigo—all disappeared. She now does hard work on the land in extreme heat. She receives one injection a week and is free of symptoms.

Case 4.—A man aged 59 suffered for six years from headache in the frontal and occipital regions. The attacks began when he had finished his hard mental work and left for his week-end rest. This is headache of the "relaxation" type, such as is experienced by a priest on a Monday and by students after an examination. Haemoconcentration reduces the volume of blood, and the relaxed arterial walls are not able to resist the dilatant effect of histamine. After seven injections the patient was free of symptoms for six weeks. He was taking small doses of ergotamine tartrate during this period. The headaches then recurred, but twenty further injections completely cured him.

Comment

I have never observed any severe side-effects. The injection of histamine influences the blood pressure and the pulse for only a few minutes. I have therefore used this therapy in heart disease, hypertension, and hypotension. Palpitations occurred in the first days of treatment, but diminished during the course of desensitization. Several patients experienced a metallic or acid taste in the mouth shortly after injection, one patient had diarrhoea which lasted a week, and vomiting occurred after the first two injections administered to a patient with hyperchlorhydria. But, despite these disagreeable secondary effects, I have on more than one occasion heard the patient say, "I am a new man."

The important point of this therapy is that the patient is completely relieved of his pain at the end of treatment and requires no other remedies. I have reached the conclusion that treatment by histamine is worth while in all cases of frequent headaches of long duration.

Summary

The clinical features and possible pathogenesis of headache due to histamine are discussed. A course of treatment by injections of histamine is described. Details are given of four patients so treated.

Medical Memoranda

Unusual Case of Coronary Thrombosis

There is both clinical and pathological evidence that thrombosis occurs at the site of a previous sclerotic or atheromatous area in a coronary vessel. The event that initiates the thrombosis is, however, very variable, and in many instances may not be apparent. The following case is interesting in view of the dramatic nature of the immediate cause of the infarction.

Case Report

A man aged 49 was seen at Professor Robert Platt's outpatient clinic and gave the following history. He had known for some years that he was abnormally sensitive to a wasp-sting, as he had previously developed severe generalized angioneurotic oedema immediately following a sting. Some months ago he had again been stung on the ankle and within ten minutes felt extremely ill, vomited, and had a sudden attack of diarrhoea. He perspired profusely and had agonizing precordial pain, as though there were a tight band around the chest. Simultaneously he developed severe angioneurotic oedema of the face and had a rigor. The next day the symptoms had subsided except for the precordial pain, which lasted for a further two days before disappearing; there was some fever at this time and he complained of shortness of breath. Seven weeks later he had no complaints except slight residual dyspnoea. Physical examination revealed no abnormalities; the blood pressure was within normal limits.

A clinical diagnosis of myocardial infarction was made. This was confirmed by electrocardiography, which showed sharp inversion of the T waves in the limb Lead I and in the unipolar precordial Leads V4 and V6, the changes being typical of anterior myocardial infarction.

Comment

This would seem to be a case of coronary thrombosis which was precipitated by a severe immediate allergic reaction following a wasp-sting. Numerous cases have been reported previously in which thrombosis followed conditions causing shock and sudden fall of blood pressure. Boas (1942), in a review of immediate causes of cardiac infarction, mentions non-penetrating chest injuries, effort, emotion, allergy, cold, infectious disease, operation, and haemorrhage. Among cases classed as due to allergy, one occurred during serum sickness a week after an injection of tetanus antitoxin; one occurred six hours after an intravenous injection of typhoid vaccine; and another developed symptoms of coronary insufficiency after prophylactic pollen injections for hay-fever. Lockhart (1939) reports another case of coronary thrombosis, proved at necropsy, which occurred three hours after an intravenous injection of typhoid vaccine, death taking place one hour later.

Although no records are available of blood-pressure readings during the acute phase of the illness, it is well known that a severe anaphylactic reaction may cause a sudden fall in arterial blood pressure. Such a fall in blood pressure may have precipitated infarction in the case reported.

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A Case of Curling's Ulcer

In 1842 Thomas Curling described an acute ulcer in the second part of the duodenum as a complication of extensive cutaneous burns or scalds. He stated that the ulcer was situated opposite the ampulla of Vater, and described it as small, clean-cut, and deep. Following this description cases of this condition were reported from many places in Britain, on the Continent, and in America. It was suggested that toxins were excreted in the bile, apparently on the supposition that the bile is secreted with such force as to impinge on the opposite wall of the duodenum and ignoring the fact that it is secreted only when food is in the duodenum. A more reasonable hypothesis is an infected embolus from the burnt area, though why infarction should always occur in the same area is not explained.

More recently cases have only rarely been reported. Some textbooks continue to give an adequate description of the condition, others make no mention of it, while some cast a varying degree of doubt over its very existence. Ross (1925), for example, states that "its occurrence is practically unknown and grave doubt has been cast on the statement" (of the occurrence of this complication of burns). The following case is reported to show that such an ulcer does occur, and that it is a complication of burns. It may be objected that the scalds were neither very extensive nor very severe, but an ulcer due to any other cause at the age of 6 years and in the second part of the duodenum is more improbable.

Case Report

On Aug. 26, 1947, a Chinese boy aged 6 years was admitted to the District Hospital, Ipoh, with second-degree scalds from hot water on the lower part of the back of the trunk, the

perineum, and the thighs. There was a moderate degree of shock on admission. His general condition improved with suitable measures, and the scalds were cleansed and then dressed with sulphanilamide cream, and sulphanilamide tablets were given by mouth. During the next three days he had a temperature ranging between 99° and 100° F. (37.2° and 37.8° C.) and a pulse rate which on the evening of Aug. 27 suddenly rose from 90 per minute to 140. There was no vomiting or tenderness in the abdomen. The bowels did not move. The next day the bowels moved, but no blood was noticed in the stool. The pulse still remained around 130, and it was noticed that the child was a little restless. On Aug. 30, in the forenoon, he suddenly passed a very large amount of dark-coloured blood per rectum and a little later vomited a small amount of dark-coloured blood. His general condition deteriorated rapidly, and in spite of measures to replace fluid loss he died the same night.

It is now evident that the haemorrhage must have started insidiously on the evening of Aug. 27, approximately 30 hours after the injury; its insidious onset and progress passed unnoticed until the occurrence of the large melaena and haematemesis, which only then drew attention to the fact that haemorrhage was occurring somewhere high up in the intestinal tract, probably in the duodenum.

At necropsy the intestine was found to be full of blood clot, the organs were pale and exsanguinated, and an acute ulcer was present in the second part of the duodenum 2.5 cm. proximal to the ampulla of Vater on the postero-medial wall. The ulcer was circular, about 1.5 cm. in diameter, with shelving walls, and extended down to the muscular coat; in the floor of the ulcer a small eroded artery was found from which apparently the haemorrhage had come.

Curling's ulcer is probably more common than is realized; it is fair to assume that not all the cases diagnosed will be reported, and it will be diagnosed only in the event of haemorrhage, perforation, or necropsy, and presumably these do not occur in every case.

Our thanks are due to the Director, Medical Services, Federation of Malaya, and the Director, Institute for Medical Research, Kuala Lumpur, for permission to publish this case report.

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A Case of Arteriovenous Aneurysm

The following case of arteriovenous aneurysm between the ascending aorta and the superior vena cava is described because of the rarity of this condition.

CASE HISTORY

A Chinese labourer aged 42 was admitted to the General Hospital, Singapore, on Aug. 22, 1947. The history given was that on the previous day at about 7 a.m., while carrying a bucket of water, he felt a sudden pain over the front of the neck; this was followed by swelling of the neck, duskiness of the face, and difficulty in breathing.

He looked very ill and presented a dramatic picture—sitting up in bed, gasping for breath, hardly able to talk, dusky over the face, neck, shoulders, and upper half of the thorax, with some swelling and induration of the soft tissues over these areas. A marked continuous thrill was felt immediately above the inner third of the right clavicle. Percussion did not reveal any enlargement of the heart. The sounds were rapid and regular, with accentuation of the second aortic. A continuous loud machinery murmur with systolic accentuation was heard over the heart and all over the chest anteriorly; it was loudest over the area of the thrill in the right supraclavicular region. This murmur disappeared when firm digital pressure was applied over the area of the thrill. The blood pressure on the right side was 130/70, on the left side 126/70. Examination of the lungs showed some diminution of breath sounds over the right side. The inguinal lymph nodes were enlarged. There were no genital scars. No abnormality was discovered in the abdomen or the nervous system.

A diagnosis of arteriovenous aneurysm between the aorta and superior vena cava was made. Death ensued after three hours. As he was dying the dusky appearance of his face faded away.

Necropsy.—The heart was normal in size, with post-mortem clots in all the chambers. The muscle was reddish brown in colour and firm. The valves were normal and competent. Pearly-white linear scars of syphilis were present at the root of the aorta and along the arch. At the junction of the ascending and transverse portions of the arch was an aneurysmal dilatation, the sac of which measured 8 cm. in diameter, with an inlet 4 cm. in diameter (Fig. 1); it was adherent to the upper lobe of the right lung. The sac had ruptured into the upper portion of the superior vena cava (Fig. 2). All the large veins of the neck were greatly dilated. Other organs showed congestion.

FIG. 1.—A, Aneurysmal sac. B. Left ventricle.

FIG. 2.—A, Opening into superior vena cava. B, Aneurysmal sac. C, Right auricle.

COMMENT

This is a typical case of spontaneous arteriovenous aneurysm within the thorax. The perforation occurred suddenly during exertion and was followed soon after by evidence of obstruction of the superior vena cava. The thrill and murmur were characteristic of an arteriovenous communication. The heart showed no evidence of enlargement, as the aneurysm did not involve the aortic ring. The aetiological factor was syphilis. Out of the 23,000 necropsies performed during the last twenty years in the Department of Pathology, Singapore, this is the first case of a thoracic arteriovenous aneurysm.

I am indebted to Dr. T. Balasingham for the necropsy report.

T. J. DANARAJ, L.M.S.

Reviews

THE NATIONAL HEALTH SERVICE

The National Health Service. By Charles Hill, M.A., M.D., D.P.H., and John Woodcock. (Pp. 432. 16s.) London: Christopher Johnson. 1949.

This is a most welcome and opportune book, which could have been produced only by people thoroughly immersed in all the complexities inherent in the new national service. It is no mere catalogue of references to clauses in the Act and regulations. In many instances the authors discuss objectively the intentions of the regulation under discussion, when these are not too clear, and the way in which the regulation is likely to work. They have also done their best, under great difficulties, to bring the book right up to date. In the last two chapters they discuss the Amending Bill (now on its way through Parliament) and give the latest proposals of the Minister on how he intends to apply the findings of the Specialists' Spens Committee. There are many valuable appendices providing full particulars of the various boards, councils, and committees which are responsible for making the system work.

I think the best test of a book of this kind is whether its index is full and intelligible. I have subjected it to many trials, from which it has emerged with credit. To give just one example, I have never been clear who is responsible for choosing the doctor for the children of a family. The index referred me to page 33, where I found that this duty devolves on the mother if the children are under 16.

In spite of the speed at which much of the book has necessarily been written there are no signs of haste in its production. It is a handsome volume, well bound, and the type is excellent. All concerned with it can be heartily congratulated. It is, indeed, as described on the cover, "a book which no one working in this vast field, whether as doctor or layman, can afford to be without." To these I would add people like me who are interested observers. I prophesy many future editions of "Hill and Woodcock."

A. Cox.

RESPIRATORY FUNCTION TESTS

L'Exploration de la Fonction Respiratoire. By Jacques Arnaud, Pierre Tulou, and Robert Mérigot. Preface by E. Rist. (Pp. 318; 54 figures. 425 francs.) Paris: Masson et Cie. 1947.

The authors first review the physiology of respiration and accepted tests of respiratory function, including bronchospirometry, and then describe a method of investigation of the function of the two lungs separately which they use as an aid in the selection of cases for collapse therapy in pulmonary tuberculosis. The 200 pages dealing with the review of physiology and accepted procedures present nothing new and are somewhat pedestrian.

The account of their own method is, however, of considerable interest. The technique consists of the occlusion of the two main bronchi in turn by an inflatable balloon on the end of a narrow catheter. They introduce the catheter under local anaesthesia through the nose, pass it blindly, if possible, through the larynx, and place the balloon in the selected main bronchus under fluoroscopic control. The patient is then placed on a couch, the anterior nares are occluded, and respirations are recorded with an ordinary Benedict-Roth recording spirometer. A first tracing is taken giving the tidal air, the vital capacity, and the oxygen-consumption for both lungs together. The balloon is then inflated to occlude one main bronchus, and the tidal air and vital capacity of the opposite lung are recorded. The authors found that in subjects whose lungs were not grossly abnormal the sum of the vital capacities of the two lungs taken separately in this way did not differ greatly from the total vital capacity. They usually included in their test a period of exercise with the legs. In patients whose pulmonary function was grossly impaired and in whom the worse lung was being examined extreme respiratory distress and asphyxia on inflating the balloon brought the test to an immediate conclusion. In cases with less severe diminution of function of the lung under examination respiration proved possible at rest, but with the added oxygen requirement of exercise the bronchial occlusion had to be terminated. In cases where dysfunction was less severe the authors assessed the relative functions of the two lungs by their vital capacities. They claim that the investigation is technically simpler than bronchospirometry, though they admit that bronchospirometry makes possible a measurement of the relative oxygen uptake and carbon dioxide output of the two lungs which cannot be done by their method. They claim, moreover, that in the proper selection of cases of pulmonary tuberculosis for surgical treatment, unilateral bronchial occlusion mimics a state of affairs which may occur transitorily after a thoracoplasty—namely, complete loss of function of the lung on the side operated upon—and that this consideration enhances the practical value of their test. Their investigations of patients who have received collapse therapy confirm the bronchospirometric finding that a pneumothorax which has been complicated by pleural effusion and subsequent pleural thickening results in extremely severe diminution of pulmonary function, usually more than that produced by a selective apical thoracoplasty.

This account of the author's own work will be of interest to all who are concerned with methods of investigating the function of the two lungs separately.

J. G. SCADDING.

TEACHING HEALTH

Health Teaching in Schools. By Ruth E. Grout, M.P.H., Ph.D. (Pp. 320. £1.) Philadelphia and London: W. B. Saunders Company. 1948.

Positive health is the modern slogan. This means that people must know how to keep well before they contract disease. Obviously such knowledge cannot be acquired too young, so health must be taught in the schools. In the "classical" school-subjects teachers know how and when to impart knowledge, having regard to the understanding and learning capacity of the children under their charge, but it is doubtful if many know how to do this in respect of health. Too often knowledge is imparted too early or too late. In this book the teacher will find first the general principles of what should be taught, and then how and when the material should be transmitted to the children at various ages. Several illustrative aids which may be used are described, and various agencies outside the school whose work can illustrate and reinforce the instruction are listed. On the whole the presentation is well balanced, sex being dealt with in its appropriate place, though it may be argued that more might be done in training a healthy mind as well as a healthy body. It is true that certain social and individual adjustments are referred to, but children are capable of absorbing more than this.

Many people in this country may find this book too American, both in presentation and in matter, but there is too little literature on this subject to allow the teacher who is really anxious to shoulder his responsibilities to neglect the present volume, which is well set out, methodical, and not too long.

R. G. GORDON.

CLINICAL CHEMISTRY

Clinical Chemistry in Practical Medicine. By C. P. Stewart, M.Sc.(Dunhelm), Ph.D.(Edin.), and D. M. Dunlop, M.D., F.R.C.P. Third edition. (Pp. 324. 17s. 6d.) Edinburgh: E. and S. Livingstone. 1949.

The appearance of the third edition of this book since 1931 indicates its value to those interested in medical biochemistry. It provides a readable account of the principles underlying the biochemical tests in common use and a useful guide to their interpretation. The section on renal function tests is particularly well done; those on basal metabolic rate, carbohydrate metabolism, gastric and hepatic function tests, and other investigations follow conventional lines to give an adequate though brief account of these subjects. The chapter labelled "Miscellaneous" is perhaps too short to be of real value; it dismisses acid and alkaline phosphatases in one page and vitamin and nutritional deficiencies in five pages. A few omissions were noted, such as the insulin test meal. The preference for "Van den Bergh units" rather than mg. bilirubin per 100 ml. of serum is to be regretted, and the authors do not make clear their opinion as to the significance of lactic acid in gastric contents. The appendix on technical methods is also somewhat brief, at all events from the laboratory worker's point of view.

A minor drawback to the book is the complete absence of references, an undesirable limitation in a growing subject of

this type. In fairness to the authors it should be noted that the work is intended for "the practitioner, house-physician, and senior student," but even those persons might occasionally feel the need to refer to a larger volume or to original papers on some special subject. It is suggested that this point might be considered in future editions.

N. F. MACLAGAN.

SLIT-LAMP MICROSCOPY

Ocular Signs in Slit-lamp Microscopy. By James Hamilton Doggart, M.A., M.D., F.R.C.S. (Pp. 112; 93 illustrations, of which 85 are in colour. 21s.) London: Henry Kimpton. 1949.

English ophthalmic literature has need of a small compact survey of the practical essentials of the slit-lamp biomicroscopy of the eye. The early works of Harrison Butler and the English translation of Koby's work are quite out of date and now out of print. For the advanced worker larger treatises are available, although none has originated in this country: the five-volumed *Atlas* of the French Ophthalmological Society published before the war is admirable, Berliner's two-volumed *Atlas* (New York) is good, and Vogt's monumental work (three volumes) is superb. But the junior postgraduate student has had no guide within his compass until the book under review appeared. The subject-matter includes all the essential techniques and the appearances of the normal, deformed and diseased eye. It is simply expressed in very readable form, not over-laden with detail, and comprehensively and beautifully illustrated with many original pictures; it contains a useful bibliography. The publishers have done their job well.

STEWART DUKE-ELDER.

OBSTETRICS FOR MIDWIVES

A Textbook for Midwives. By Wilfred Shaw, M.D., F.R.C.S., F.R.C.O.G. (Pp. 689; 223 illustrations. 12s. 6d.) London: J. and A. Churchill, Ltd. 1948.

Wilfred Shaw has already set a high standard as a writer of textbooks and his reputation will certainly be enhanced by this new book for midwives. It is clear that in preparing the work he has had in mind what he himself calls "the serious student," and particularly the nurse who is preparing herself for the Teachers' Diploma. Realizing, however, that the nurse may be deficient in her knowledge of basic sciences, he has included sections on certain aspects of physiology, chemistry, and physics; he discusses, for example, osmotic pressure, dialysis, crystalloids and colloids, adsorption, and the mechanisms of cell division. He has thoughtfully added a glossary of the more difficult technical terms used throughout the book.

In the main subject-matter there is little to criticize and much to praise. The teaching is similar to that presented in the author's well-known textbook on obstetrics for medical students, though he has necessarily modified certain aspects to make it suitable from the point of view of the midwife. As with Shaw's other textbooks, this one contains numerous and carefully chosen illustrations, many of which are reproductions or redrawings of the illustrations in standard German textbooks.

The concluding chapters take the form of short sections on cancer of the uterus and breast; definitions and statistics; a short history of the development of midwifery; the Central Midwives' Board and the local supervising authority; the midwife–doctor relationship and the future of midwifery.

This book can be thoroughly recommended to the more advanced midwife. The style of writing is simple and clear and a full explanation is given—when explanation is possible—of the whys and wherefores of obstetric practice.

J. CHASSAR MOIR.

Zinc Ions in Ear, Nose, and Throat Work, by A. R. Friel, M.D., F.R.C.S.I. (pp. 60; 41 illustrations; 5s. 6d.; Bristol: John Wright and Sons, 1948), is a small book that sets out in detail the methods of performing zinc ionization as a curative treatment of chronic middle-ear suppuration, hay fever, asthma, and vasomotor rhinitis. In a preliminary chapter the author recites the history of the origin of this treatment, instituted by Dr. Leduc, and with the help of many clear illustrations explains the electrical principles involved. Zinc electrolysis is also advocated for destruction of tissues, including bone and aural polypi. The value of the thesis would be enhanced if it included results of the therapy. The clear illustrations will be of great help to those who intend to use this treatment.

BOOKS RECEIVED

[*Review is not precluded by notice here of books recently received.*

On the Contributions of Hugh Owen Thomas, Sir Robert Jones, and John Ridlon to Modern Orthopedic Surgery. H. W. Orr, M.D. (Pp. 253. 25s.) Oxford: Blackwell Scientific Publications. 1949.

Shaw on Vivisection. Edited by G. H. Bowker. (Pp. 65. 5s.) London: George Allen and Unwin. 1949.

Dentistry in Public Health. Edited by W. J. Pelton, B.S., D.D.S., M.S.P.H., and J. M. Wisan, D.D.S., M.S.P.H. (Pp. 363. 27s. 6d.) London: W. B. Saunders. 1949.

Population Trends and Policies. By W. D. Borrie, M.A. (Pp. 263. 21s.) London: George G. Harrap. 1948.

No Place to Hide. By D. Bradley. (Pp. 191. 7s. 6d.) London: Hodder and Stoughton. 1949.

The British Encyclopaedia of Medical Practice: Medical Progress 1949, and Cumulative Supplement 1949. (Pp. vi and 423. 32s. 6d. and 27s. 6d.; combined price 50s.) London: Butterworth. 1949.

Inmovilizacion. By P. Reggi. (Pp. 326. No price.) Buenos Aires: Lopez and Etchegoyen. 1948.

Surgical Technique. By A. V. Partipilo, M.D., F.A.C.S. (Pp. 611. 75s.) London: Henry Kimpton. 1949.

Conférences Cliniques de Medécine Infantile. By H. Gerbay. 3rd ed. (Pp. 275. No price.) Paris: Vigot. 1949.

The Mind in Action. By E. Berne. (Pp. 348. 15s.) London: Lehmann. 1949.

Skin Diseases in General Practice. By F. R. Bettley, T.D., M.D., F.R.C.P. (Pp. 260. 21s.) London: Eyre and Spottiswoode. 1949.

Proceedings of the University of Otago Medical School, 1948. Edited by J. B. Dawson, K.B.E., M.D., F.R.C.S., F.R.C.O. No. 26. (Pp. 208. No price.)

Neuroradiology. By A. Orley, M.D., F.F.R., D.M.R.D. (Pp. 421. 63s.) Oxford: Blackwell. 1949.

Mathematical Biophysics. By N. Rashevsky. (Pp. 669. 63s.) London: Cambridge University Press. 1948.

Pathology. Edited by W. A. D. Anderson, M.A., M.D., F.A.C.P. (Pp. 1,453. 75s.) London: Kimpton. 1948.

Tuberculosis in History. By S. L. Cummins, C.B., C.M.G., LL.D., M.D. (Pp. 205. 21s.) London: Baillière, Tindall and Cox. 1949.

The Natzweiler Trial. Edited by A. M. Webb, M.A., F.R.S.A. Vol. 5. War Crimes Trials. (Pp. 233. 18s.) London: William Hodge. 1949.

Mostly Memories. By W. Guy, LL.D., F.R.C.S., L.R.C.P., L.D.S., F.R.S.Ed. (Pp. 360. 15s.) Edinburgh: C. J. Cousland. 1948.

Psychiatry. By W. C. Menninger, M.D. (Pp. 138. 11s. 6d.) London: Geoffrey Cumberlege. 1948.

Age is Opportunity. Issued by the National Old People's Welfare Committee. (Pp. 118. 2s. 6d.) London: National Council of Social Service. 1949.

Cybernetics. By N. Wiener. (Pp. 194. 18s.) London: Chapman and Hall. 1948.

Über die Nierentuberkulose im Kindesalter. By R. Müller. (Pp. 49. M. 6.30.) Stuttgart: Georg Thieme. 1948.

Die Pathologisch-Anatomischen Grundlagen der Allergie. By W. Eickhoff. (Pp. 95. M. 8.40.) Stuttgart: Georg Thieme. 1948.

Funktionelle Dünndarmdiagnostik im Röntgenbild. By H. Naumann. (Pp. 96. M. 9.60.) Stuttgart: Georg Thieme. 19[illegible]

BRITISH MEDICAL JOURNAL
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A POPULATION POLICY

There are few more complex problems than the future of the population of this country, and it is hardly a matter for surprise that in taking stock of it the Royal Commission on Population has spent five years and rather more than £200,000—a very great part of which sum was the cost of special statistical surveys. The task of the Commission was "to examine the facts relating to the present population trends in Great Britain, to investigate the causes of these trends and to consider their probable consequences; to consider what measures, if any, should be taken in the national interest to influence the future trend of population; and to make recommendations." In its work it has been assisted by three scientific committees: statistics, presided over by Sir Alexander Carr-Saunders; economics, presided over by Sir Hubert Henderson (the Chairman of the Commission after the resignation of Lord Simon); and biological and medical, presided over by Professor A. W. M. Ellis. The many reports and papers that these committees have submitted to the Commission will themselves soon be published in a series of volumes, including the results of the sample family census taken in 1946. The Report of the Commission itself,[1] published this week, surveys these detailed studies from a broader standpoint, summarizing them in simple form or quoting the results it needs in the development of its arguments. It has thus produced a readable as well as a highly important document.

Historically we know little of the population of Great Britain before the eighteenth century, though there can be little doubt that it grew very slowly. The seven million estimated, with reasonable reliability, to be the total number in 1700, had increased to 10½ million at the first census in 1801 and to 37 million a hundred years later (with close upon 50 million to-day). Such a rapid rate of growth had inevitably to come to an end, either through the Malthusian checks of famine and disease or by some other means. Already one of the most densely populated countries of the world, with some 600 persons to the square mile, we should have been faced with disaster by a continuation on any such scale. As everyone knows, the correcting factor came with the fall in fertility that began about 1870. Taking the two ends of the time scale, the special questions included at the census of 1911 show that married women born in 1840–60 produced, on the average, a family of five to six children; for women married in 1925–9 the family census of 1946 gives only a fraction over two children for their completed families. Of the Victorian group 20% had families of two or less, 33% had families of eight or more; the corresponding figures for women married in 1925 are 67% with no, one, or two children, 2.3% with eight or more. That phenomenon, coupled with greatly reduced rates of mortality at nearly every age, is the salient fact in the modern history of our population.

It has been argued by some that unnatural and unhealthy ways of living have reduced our reproductive capacity, though the improvement in standards of health to-day might well be expected to have quite the reverse effect. However that may be, the Commission accepts the views of its medical committee that no physiological or biological factor would prevent married couples having larger families to-day if they wished. They do not wish; or, in other words, deliberate birth control is the significant feature, and from this adjustment to modern life it is neither likely nor desirable that there should be any return. There has been, however, during the course of the Commission's work, a particularly interesting check to the fall in the number of births, and, indeed, in the later years of the war and in the post-war years a very large increase. Some decline in these larger numbers has, however, been apparent recently, and it is likely that the increase is a temporary feature due to younger marriage and also to the fact that the average size of family has, at least for the time being, ceased to decline. For the past twenty years it has been comparatively stable at 2.2 children, and there is some evidence that the very small family is no longer as fashionable as it was in the early 1920's. This present number, however, is calculated to be about 6% below what is needed for the replacement of the population (a much less pessimistic figure than that based in pre-war years upon net reproduction rates).

What then of the future? We now enter to some extent upon the realm of uncertainty; but it is well to realize that it is only to some extent, that apart from immigration the stage is in some respects already set. Thus inexorably from the present age distribution of the population it follows that, immigration apart, the number of young adults (15–39) must fall over the next fifteen years: in 1947, of every 100 persons 28 were aged 0–19 and 30 aged 20–39; and clearly 28 cannot fully replace 30. At the same time the number of old people (over 65) must grow steadily for the next thirty years even if no appreciable fall in mortality takes place, which with the present advances in medical knowledge is clearly most unlikely. In 1891, 7% of the population were of ages 60 and above; in 1947 it was 15%. The final group upon which we can speak with some certainty is the population of working age, which will remain at about its present absolute size for at least the next thirty years though it will come to form a smaller proportion of the total. If we turn to the unknown, there is a possibility, as already suggested, that the one-child or two-children families may become less common. On the other hand, in completed families of to-day one in five have four or more children, so there is room for further shrinkage here. If, however, average family size remains as in the period of stability in the early 1930's, the population will reach a maximum in about 1977 and thereafter begin a slow decline. If, on the other hand, there is a further reduction in family size—and not necessarily a very large one—then the decline of annual births will become rapid, and well before the end of the present century the numbers of children and young adults will be falling rapidly.

[1] Report of Royal Commission on Population, H.M.S.O., Cmd. 7695. p. 259.

The change in the age distribution is, of course, already an inescapable problem of great social and economic import. There is no doubt that, apart from the actual increase in the numbers of the old, the "burden" of maintaining them has risen. The old of to-day almost certainly consume at a higher level than they did a couple of generations ago, and, possibly, on the average they are less productive. In 1948 the cost to the Exchequer of retirement pensions was £238 million; in 1978, even if there be no future fall in mortality, it is estimated at £501 million. The Commission is clearly of a mind that we cannot maintain this level of consumption with no productivity, and believes that further improvement in the standard of living may turn upon the extent to which the old can contribute to the economic effort of the community. On the other hand, later ages of retirement may imply a lack of promotion for the young; perhaps in general a lack of vision and enterprise. Some *via media* must inevitably be sought. With youth, or at least middle age, at the helm, part-time and, with their experience, consultative work for the old and retired might prove a partial solution.

On the general problem of the total size of the population the Royal Commission firmly concludes that a replacement size of family is desirable in Great Britain at the present time. Under its terms of reference they are, therefore, to consider whether any steps can be taken to influence the future trend to ensure replacement. Reviewing the various factors of importance, it first shows clearly the economic disadvantages of the married couple with young children compared with a childless couple. But non-monetary handicaps may to-day also be still greater deterrents to parenthood. The young married woman is not prepared to accept the arduous married life of her Victorian predecessor, and the point at issue is whether, regardless of affluence, she will be willing to bear an average size of family that will maintain the population. To encourage her to do so the work of running a home and caring for a family must somehow be lightened, for improvement in such work has, the Commission thinks, lagged behind the general advance of living and working conditions. Mothers can share in the important social gain of leisure only by limiting the number of their children; at present they have shared, the Report says, very little in the great reduction of working hours and the shift from heavier to lighter work. In that connexion, however, it should perhaps be remembered that in terms of mortality women have gained in the past century more than men; the fall in their death rate has been distinctly faster.

In considering how to promote family welfare the Commission entirely rules out any measures which would tend to impede the spread of voluntary parenthood or to restrict the freedom of women. We must, given reasonable social conditions, rely upon instinctive desires for a family and the realization of its lasting satisfaction in comparison with more ephemeral and shallow standards of values. But the "reasonable social conditions" are fundamental. Broadly they fall under two headings: (1) financial assistance or relief, and (2) services for the special benefit of children and mothers. Under the first heading the Commission argues that in the process of social advance the family has been overlooked. For instance, while expenditure on children's allowances is in terms of millions that upon old-age pensions is in hundreds of millions. Although the country's financial policy aims at keeping down the pressure demands for goods and services, the Commission regards "a moderate extension of assistance to parents, not merely as a desirable objective of long-term policy, but as an urgent need." They do not favour marriage loans, for the statistical evidence shows that there is no reluctance to marry. It is the coming of children that must attract support, and the Commission's main specific proposal is that the rate of free allowances under the Family Allowances Act should be immediately increased to 7s. a week and for children of 11 years or over to 10s. a week, subject to the exclusion of the youngest child of the family—the exclusion which should be removed so soon as financial conditions permit and at present to be partly compensated for by a moderate lump sum payment for the first birth. These child allowances should be tax free.

It is obvious that such increases in allowances will not remove the financial deterrents at the higher income levels and the hard-hit middle classes will note with relief that the Commission speaks clearly and encouragingly upon their behalf: "Those with high and medium incomes represent an important element in the community, whose ways of life, standards of value and ideas influence their fellow citizens both directly and indirectly." While there may be in time a simplification of the conventional standards of upbringing, including perhaps education, it is at present suggested that the income-tax allowance for a dependent child should be either £60 as now (as a minimum) or one-tenth of the earned income up to £1,000 plus one-twentieth of any earned income in excess of £1,000 (with a maximum deduction of £150). As an example, a married couple with four dependent children with an earned income of £1,500 would pay £189 in tax compared with the present sum of £30. The Commission also favours the establishment of professional contributory schemes for supplementary children's allowances, and would like to see allowances brought back into the salary scales of officers in the fighting services. Such reliefs would undoubtedly remove some of the financial difficulties associated with parenthood. Whether they will promote parenthood is quite another matter. The care of children is a twenty-four-hours-a-day job, and with no outside help there is no relief from it. As the financial circumstances of the country allow, the Commission proposes the development of help to mothers through home-helps, sitters-in, day nurseries, nursery schools, and other means. With the present scarcity of labour and the reluctance of girls to adopt any kind of domestic work some of this programme may obviously be more desirable than practicable.

In a special chapter devoted to the Health Services the Commission welcomes the fact that the whole family has become entitled to the services of a general practitioner, which removes another financial handicap of parents as against the childless. It would like to see the investigation and treatment of infecundity provided within the National Health Service; artificial insemination it regards as outside its business. The frequency of criminal abortion is unknown, but "sufficiently widespread to constitute a grave social evil." Much of it might be circumvented by contraception

of which there is, the Commission believes, still considerable ignorance. All present restriction on the giving of such advice should therefore be removed, and the married persons who want it should be entitled to it under the National Health Service. The initial duty to give advice it places upon the family doctor, in which event training will have to be given in the medical course. Under housing it notes that in the present programmes some 70% of houses have three bedrooms, 22% less than three, and only 8% more than three. To meet family needs more larger houses are required, and priority in the letting of local authority houses should be given to families with children. On the analogy of education and health services the Commission states that there is a strong case for a general system of rent subsidies or rate rebates related to numbers of dependent children. Many persons will warmly welcome their strong recommendation that far more facilities should be made available for the school teaching of the practical crafts of home-making—cookery, dressmaking, child-care, household repairs—and that boys should share in this branch of education. Finally, on research the Commission suggests that the Lord President of the Council should be responsible for a continuous watch over population movements in relation to national policies, while the Interdepartmental Committee on Social and Economic Research should take under its wing the promotion and encouragement of population research with assistance from expanded sections of the General Register Offices of Great Britain.

In brief, the future growth of our population now depends increasingly on the decisions taken by individual men and women about the numbers of children they will have. These decisions may, on the average, be influenced by policy, by making parenthood less financially onerous, by making life easier for the mother. But they may be dependent more upon standards of values, upon public opinion, and upon the vision of the future the people at large may hold. The Royal Commission has put forward concrete schemes for easing the burden of parenthood, and it is to be hoped that national finance will allow them to be put into operation. Only the slow passage of years can prove their success or failure.

MIND, MACHINE, AND MAN

The ever-accelerating growth of knowledge has set philosophers a problem which they have not yet succeeded in solving. Even as recently as three hundred years ago it was not beyond the wit of one man to comprehend the greater part of existing science and to know at the same time much of the classics and something of philosophy. But now science has long been divorced from the older learning, and its individual disciplines are becoming so specialized that they are steadily moving away, both from any central co-ordinating philosophy and from each other, in the confines of the expanding universe of thought. Philosophers nowadays cannot possess the technical knowledge necessary if they are to understand the problems of the scientific expert. This has led some scientists and mathematicians to become their own philosophers, sometimes with conspicuous success. In medicine there is at present a great need for a philosophic outlook. Three subjects call urgently for consideration—the canons of thought which operate when we think about disease, the preservation of the values inherent in medicine in this changing world, and the body–mind relationship. Unlike his academic colleagues, the practising doctor has little leisure to think; but against this he can set the unique advantage that man, body and mind, is both the material of his art and the subject of his thought. Medical philosophers have never been numerous, but their value to their profession as well as to the community is high, and out of all proportion to their numbers.

Professor Geoffrey Jefferson, F.R.S., whose Lister Oration we publish in the opening pages of this issue, has much to say which is both timely and in the high tradition of medical philosophy. Electrical computing machines have recently been constructed which can make mathematical calculations at a speed far greater than is possible for the human brain, and in the course of doing so retain the necessary data as long as they are needed. Such machines have been called "electronic brains," and their creation has raised in a new form the question of the relation between brain and mind. Some workers in this field believe that by embodying the same electrical principles as underlie neural activity the machines can throw light upon what happens when we think and remember, and that even the highest functions of the human mind may thus be shown to be capable of a fairly simple mechanistic explanation. Jefferson utters a salutary warning against such an over-simplification of the problem. He points out that, though the passage of a nervous impulse is accompanied by a change of electrical potential, it is not at present justifiable to assume that it is merely an electrical discharge. On the other hand, it may be that "the living nerve cell has its own laws and the nervous impulse no counterpart." Here he puts his finger on the fallacy which underlies the talk of a mechanical or electronic "brain." The electrical impulse is an abstraction from nervous activity; it is not in itself nervous activity. Similarly, the electrical computing machine embodies an abstraction from the multifarious activities of the brain. Any such machine must have something in common with the processes of the nervous system; otherwise it could not do what the nervous system does—in this case make calculation possible. But nothing more is required of the machine than that it should accurately reproduce by means of electrical equivalents the logical processes of numeration. Mechanical calculating machines have existed for many years, and now, Professor M. H. A. Newman, F.R.S., informs us on another page, can be coded to play "a legally correct game of bridge, poker, or chess." To say that, because a machine can be constructed to symbolize certain processes of thought, machines will one day be made which could fall in love, write sonnets, or rule their makers is merely bad logic.

Mr. A. W. Turing, who is one of the mathematicians in charge of the Manchester "mechanical brain," said in an interview with *The Times* (June 11) that he did not exclude the possibility that a machine might produce a sonnet, though it might require another machine to appreciate it. Probably he did not mean this to be taken too seriously,

but the reason why it could not happen illuminates the difference between the brain and a machine. Jefferson points out the inadequacy of words to express many of our experiences, especially our feelings. But these are the very stuff of which poetry is made. The poet, unlike the abstract thinker, uses words not for their definitive but for their associative power, to create in his hearer by means of images, ideas, and even rhythms the feelings he has himself experienced. He succeeds in so far as he thus expresses the inexpressible. But what evidence is there that feelings can be identified, not merely correlated, with electrical rhythms which could be induced in a machine?

There is an undeniable danger in the facile acceptance of materialism, for the materialist finds values and ethics an insoluble problem. If the mind is ultimately mechanical, what is the source of its standards of right and wrong? These can be only the result of individual and social conditioning and can have no more than personal validity. Individuals differ, States conflict with one another, and it is useless to appeal to the evolutionary process. That knows neither higher nor lower: it has produced the tapeworm as well as man, and issued impartially to each its approval-certificate of survival. If man prefers complexity and richness of experience, this is just human prejudice: the tapeworm is all for the simple life and adaptation to environment. It is illuminating to see how a machine may be expected to deal with an ethical problem. An electrical calculating machine can perform in a few hours a calculation which would take a mathematician many months. How, then, are the machine's results to be checked? Wiener, to whose book *Cybernetics* Jefferson alludes, explains that this is done by setting three machines the same problem and, if they do not all agree on the answer, accepting the verdict of the majority. Inevitably in the world of machines ethics is decided by the majority. This generation, at least, knows where that doctrine leads —to tyranny, the concentration camp, the gas chamber, and the cremation oven.

Whitehead, in *Science and the Modern World*, has pointed out that science arose in opposition to current mediaeval ideas, which were rationalistic. Science, with its emphasis on brute fact, "has remained predominantly an anti-rationalistic movement based upon a naive faith." The danger of rationalism lies in its systematizing tendency, which tidies up the loose ends of thought. But the main facts of a science may be equally consistent with several theories; it is often the details that are decisive. It was a few minute discrepancies between the Newtonian theory and certain astronomical observations that led to its supersession by the theory of relativity. Theorizing about the body–mind relationship is premature. Many years of work lie ahead before the decisive details will be uncovered. This work needs to be done in the spirit of science and not of rationalism. When we think about the mind it is with the mind that we do this, and the mind must surely be greater than its own ideas about itself. If we fail to recognize this, we may suffer the fate of the inhabitants of Butler's *Erewhon* and be enslaved by machines, not, however, because of their intrinsic force but because, like Narcissus, we have fallen into the power of our own reflection.

PROCAINE PENICILLIN

The use of "depot" or "repository" preparations is by far the most satisfactory of the many methods devised for prolonging the action of penicillin with the object of reducing the discomfort of multiple injections. The disadvantages of the oil and wax preparation described by Romansky and Rittman[1] in 1944 have now been overcome by the discovery by Salivar, Hedger, and Brown[2] of an insoluble salt of procaine and penicillin which is slowly absorbed from the site of injection. Recent papers appearing in this country confirm the favourable results obtained by workers in the U.S.A. Trials in adults of procaine penicillin suspended in arachis oil (300,000 units per millilitre), reported by Jones and Shooter[3] and Young, Andrews, and Montgomery,[4] have shown that in over half the cases therapeutic blood-penicillin levels were present 24 hours after a single injection of 300,000 units. When the oily suspension of procaine penicillin is combined with aluminium stearate, absorption is further prolonged, and 24 hours after a dose of 300,000 units the blood penicillin is still at a therapeutic level.[4]

The value of these preparations in paediatric practice is due not only to their prolonged action but also to the complete absence of pain on injection. Experience of their use at the Sheffield Children's Hospital has confirmed the results obtained in adults. Using the oily suspension of procaine penicillin in doses graded according to age, Emery, Stewart, and Stone, whose report was published in the *Journal* of May 14 (p. 845), found that blood levels were too variable for reliance to be placed on once-daily injections—only 29 out of 50 cases having a blood-penicillin level of 0.03 units per ml. or over after 24 hours. Wilson, Farquhar, and Lewis[5] obtained similar results in older children, but found that blood levels were higher in infants up to 15 days old.

Elsewhere in this issue Drs. J. L. Emery and L. M. Rose, Miss S. M. Stewart, and Professor E. J. Wayne report on the use in children of procaine penicillin in oil combined with aluminium stearate. They used a preparation in which over 95% of the particles were below 5 μ in diameter. Sixty-six children were given intramuscular injections in doses graded according to age: those under 1 year were given either 75,000 or 150,000 units, children aged 1 to 4 received 150,000 units, while older children were given the full adult dose of 300,000 units. All except one had blood-penicillin levels of 0.06 units per ml. or over at 24 and 48 hours. In eleven children daily injections maintained a high continuous level in the blood. Undesirable reactions were absent. These authors conclude that procaine penicillin in oil with aluminium stearate is a suitable preparation for once-daily injection. Owing to slow absorption it might be expected that the blood penicillin would not rise quickly, but in many cases surprisingly high initial levels have been recorded. Young, Andrews, and Montgomery,[4] for example, state that four hours after an injection of 300,000 units blood levels as high as 4 units per ml. may be found. In order to test the hypothesis that renal excretion of procaine penicillin was slower than that of sodium penicillin, Barnett and his co-workers[6] measured the renal clearance rate in infants and children of sodium and procaine penicillin, but failed to demonstrate any significant difference. It thus appears that the action of these substances is due only to delayed absorption. These preliminary reports indicate that the addition of procaine penicillin to the preparations available is another step forward in penicillin therapy, and further reports of its use, especially in those cases needing prolonged treatment, will be awaited with interest.

[1] *Science*, 1944, **100**, 196.
[2] *J. Amer. chem. Soc.*, 1948, **70**, 1287.
[3] *British Medical Journal*, 1948, **2**, 933.
[4] *Lancet*, 1949, **1**, 863.
[5] Ibid., 1949, **1**, 866.
[6] *Pediatrics*, 1949, **3**, 418.

PHAEOCHROMOCYTOMA

Adrenaline-producing tumours of the adrenal medulla, the phaeochromocytomata, are a rare but often notable cause of hypertension. The literature contains accounts of nearly 200 patients with such tumours, of whom 64 have been operated on with 12 deaths. Mr. T. M. Reid and Dr. R. Salm report a further case in this issue of the *Journal*. The commonly described symptoms are those referable to the sudden outpouring of adrenaline into the blood stream in response to postural changes, exercise, pressure on the abdomen, straining at stool, or emotional disturbances such as anger or fear. This release of adrenaline causes a rapid rise in blood pressure to very high levels, usually accompanied by severe headache. Other symptoms not unlike those associated with functional nervous disorders also commonly occur, such as anxiety, weakness, dizziness, sweating, nausea, vomiting, and dilatation of the pupils. These attacks are typically of short duration, and when clear cut are sufficiently unusual to lead frequently to the right diagnosis. But if attacks are long continued they may result in a more persistent hypertension, with renal damage, cardio-vascular disturbance, papilloedema, and other retinal changes, which may make the diagnosis from malignant hypertension difficult—especially in the small proportion of cases in which a history suggesting paroxysmal hypertension may be absent.

Recently several functional tests have been introduced which aid considerably the recognition of hypertension due to over-production of adrenaline from such a tumour. Roth and Kvale[1] have shown that small doses of histamine (0.05 mg.) injected intravenously will stimulate a paroxysm of hypertension in cases of phaeochromocytoma, with a systolic pressure even as high as 300 mm. Hg. But less extreme rises may occur which can be difficult to interpret, since histamine-sensitive individuals may react with a moderate rise. Believing the histamine test unreliable, Guarneri and Evans[2] suggested the use of "mecholyl" (acetyl-β-methylcholine chloride), which they found in one case of phaeochromocytoma caused a short, sharp rise in blood pressure—the normal response being a slight fall. There has as yet been insufficient experience with this test. Both tests have the definite disadvantage that the results of an unduly sharp hypertensive response may be serious. For this reason the use of the new anti-adrenaline compounds will probably be more satisfactory. Goldenberg, Snyder, and Aranow[3] have demonstrated that in cases of phaeochromocytoma intravenous benzodioxane in doses of 0.25 mg. per kg. of body weight causes a drop in blood pressure lasting about 15 minutes. In one of their cases a tumour was removed, and subsequently a fall in blood pressure was still found after injection of benzodioxane. This was interpreted as evidence of the presence of further adrenaline-producing tissue, and at a second operation another phaeochromocytoma was removed.

More recently Spear and Griswold[4] have used a different adrenolytic compound, dibenamine, for the same purpose. Given by slow intravenous injection in doses of 7 mg. per kg. body weight, this also causes a pronounced fall in blood pressure to normal levels. Its action is much more prolonged than that of benzodioxane, and for 24 hours after injection it will prevent further spontaneous attacks and will also prevent the rise of blood pressure ordinarily provoked by histamine. Because of this more prolonged action dibenamine is likely to be of great value not only in diagnosis but also in the pre-operative preparation of patients, for the main causes of the high operative mortality are the rapid outpouring of adrenaline during manipulation of the tumour and the subsequent shock resulting from sudden diminution of the supply of adrenaline after its removal.

[1] *Amer. J. med. Sci.*, 1945, **210**, 653.
[2] *Amer. J. Med.*, 1948, **4**, 806.
[3] *J. Amer. med. Ass.*, 1947, **135**, 971.
[4] *New Engl. J. Med.*, 1948, **239**, 736.

BENIGN PROSTATIC HYPERTROPHY

Study of the aetiology of benign prostatic hypertrophy has been hampered by the fact that many of its characteristics are peculiar to man; it occurs in only one other animal—the dog—and so far it has been impossible to produce hypertrophy experimentally. The common and reasonable view is that the hypertrophy results from some endocrine disturbance occurring in the fourth or fifth decade of life, which is perhaps comparable to the climacteric. In a review of the subject Huggins[1] concludes that in the dog the process of enlargement—a cystic hyperplasia—is governed by two factors—time and testicular secretion. In man the lesion is composed of multiple spheroidal nodules made up of epithelium, muscle, and fibroblasts. Histologically these nodules are benign tumours, an observation which is supported by their type of respiration.[2] In the mouse, guinea-pig, and monkey the prostate has two separately functioning parts.[3 4] From evidence based on embryological research[5] and the response of the prostate to oestrogen administration Huggins considers that the human prostate has two different functional areas. The spheroidal nodules are seen only in the medullary region. Since the prostate does not become enlarged in early life, presumably the stimulus to enlargement acts over a long period. The lesion does not occur in castrates, and it is therefore reasonable to suppose that the stimulus is testicular in origin. In dogs with an established hypertrophy castration causes a shrinkage but not complete disappearance of the lesion. Huggins studied the effects of orchidectomy in men suffering from benign prostatic hypertrophy and noted relief of the obstructive symptoms, with diminution in the size of the gland but not disappearance of the spheroidal nodules. He also treated a series of cases with oestrogen in doses sufficient to cause breast growth. The changes produced were those of mild injury to the epithelial cells of the acini in the medullary portion of the gland; the cortical area was unaffected. These observations serve to confirm the importance of androgen in the aetiology of benign prostatic hypertrophy.

AN "EYE BANK" ESTABLISHED

That corneal-graft surgery now has many applications in the treatment of blindness due to injury or disease of the cornea was the opinion of ophthalmologists from many countries who were present at the recent Congress of the Ophthalmological Society of the United Kingdom. It was indicated that the fashion of the graft is changing and that the partial graft is returning to favour. This type of graft does not penetrate the entire thickness of the cornea, and there is, therefore, no risk of iris adhesion to the corneal section, with consequent formation of opacities in the graft. Many successful grafts have been performed in this country, but surgeons have had to contend with considerable difficulties. Living grafts are scarce and, like hospital beds, may not be available just when they are required. The infrequency of the operations makes it difficult to arrange for postgraduate tuition at short notice.

[1] *Bull. N.Y. Acad. Med.*, 1947, **23**, 696.
[2] Barron, E. S. G., and Huggins, C., *J. Urol.*, 1944, **51**, 630.
[3] Walker, G., *Bull. Johns Hopk. Hosp.*, 1910, **21**, 182.
[4] van Wagenen, G., *Anat. Rec.*, 1936, **66**, 411.
[5] Lowsley, O. S., *Amer. J. Anat.*, 1912, **13**, 299.

Donor grafts can now be preserved in oil or vapour in an "eye bank," and are suitable for use up to three days after removal from the living or cadaver eye. Some authorities claim better results with preserved grafts. As the scope of the operation widens, the demand for instruction in technique from home and overseas increases, and an adequate supply of donor grafts for treatment and post-graduate instruction has become essential. Not long ago a letter was published in the *Journal* (Dec. 4, 1948, p. 999) from an Australian doctor who deplored the absence of an eye bank in this country. Now, to meet the need, the South-east Metropolitan Regional Hospital Board has established a corneo-plastic unit and eye bank in conjunction with the plastic centre at East Grinstead. With the co-operation of ophthalmic surgeons in the region, and with assistance from other sources, a supply of donor grafts will be preserved. This will provide increased opportunities for treatment and improved facilities for instruction and study.

The resources of this unit, however, will not be entirely limited to corneal-graft surgery; they will also be available for the special cases which are the joint problem of ophthalmologists and plastic surgeons. Such cases include severe injuries of the lids and orbit, resulting in complicated lacrimal obstructions or paralyses of extra-ocular muscles. The surgical treatment of the various forms of ptosis, congenital abnormalities of the lids, and the lacrimal apparatus, new forms of enucleation with implantation, and the applications of modern prostheses are all examples of subjects for clinical research. Thus, a combined team of ophthalmologists and plastic surgeons, aided by the facilities of a modern plastic unit, will bring special interest and experience to bear on these problems. The South-east Metropolitan Regional Hospital Board is to be congratulated for sponsoring the formation of such a unit, which is a welcome addition to the resources of British ophthalmologists and an asset in the treatment of blindness in this country.

PAIN IN PHANTOM LIMBS

A phantom limb is a natural consequence of amputation and is experienced by the majority of patients; a painful phantom, however, is a rarer condition. In Henderson and Smyth's[1] series of 300 patients of military age only 4% had painful phantoms, though others have reported a higher incidence than this, possibly on account of the age and other special features of patients whom they were studying. Henderson and Smyth concluded from their detailed study of the symptoms of phantom limbs that various epiphenomena may occur; in some patients there was a "neuroma sensation," which resulted from the mechanical stimulation of neuromata in the stump and consisted of instantaneous sensations of pins and needles referred to the peripheral distribution of the divided nerves. In a minority of cases only there were complaints of pain, distorted attitudes of the phantom, and involuntary spasmodic movements, all of which the authors considered were of psychological origin. This view of the cause of pain in phantom limbs is not universally held, and the pain is often considered to be of peripheral origin.

Many methods of relieving the pain have been tried, including local excisions of the neuroma, sympathectomy, posterior rhizotomy, chordotomy,[2] and even excision of areas of the parietal cortex.[3] In a preliminary report which was published in the *Journal* of June 11 (p. 1024) Dr. W. Ritchie Russell suggested a much simpler procedure than these operations; it has been successful in seven cases, several of them of long standing. The method was introduced for three reasons: first, the observation that in the normal limb nerve endings in the skin are rendered insensitive by occupations which entail repeated minor traumata or prolonged firm pressure on the skin; secondly, that conduction in a mixed nerve is easily interrupted by repeated pressure without the production of any spontaneous pain; and, thirdly, on the assumption that regenerating nerve fibres in an amputation stump are likely to be no less vulnerable to minor trauma or pressure than normal nerves and nerve endings. The practical application of this reasoning was to percuss the neuromata into a state of "chronic concussion." As this can be a somewhat painful process at the onset, a local anaesthetic may be injected into the stump or a sphygmomanometer cuff may be applied to the stump and inflated to over 200 mm. Hg, which renders the tender scars and neuromata less sensitive after two to three minutes. Percussion is carried out by gentle hammering with a small wooden mallet or mechanical vibrator and continued with increasing vigour for about ten minutes. It is advisable to use a wooden applicator to transmit the blows of the mallet to the neuromata. At first treatment must be repeated at least twice a day, but in some cases once daily was sufficient; as Dr. Ritchie Russell puts it, "The patient soon learns to knock away his phantom pain whenever it becomes troublesome."

This is a refreshingly simple method conceived on sound physiological principles if the major hypothesis is accepted that pain in phantom limbs is of peripheral origin. If the method should prove successful in a large number of cases it would serve as additional proof for this hypothesis, though it would still be difficult to explain the failure in some cases of division of sensory nerves and posterior roots to relieve the painful phantom.

[1] *J. Neurol. Neurosurg. Psychiat.*, 1948, **11**, 88.
[2] Falconer, M. A., and Lindsay, J. S. B., *Brit. J. Surg.*, 1946, **33**, 301.
[3] De Gutierrez-Mahoney, C. G., *J. Neurosurg.*, 1944, **1**, 156.

VISCOUNT ADDISON

Viscount Addison attained his 80th birthday on June 19, and will have the good wishes of the profession in continuing a career that has been fruitful in both medicine and politics. He was the first whole-time lecturer in anatomy at St. Bartholomew's Hospital, and later held the chair in that subject at University College, Sheffield, subsequently serving as examiner for the Universities of Cambridge and London. In 1910 he was elected to Parliament as the Labour member for the Hoxton division, and soon after the outbreak of the first world war he was transferred to the Ministry of Munitions, where he served under Mr. Lloyd George, and in 1916 succeeded him as Minister. In 1919 Dr. Addison, as he then was, became the first Minister of Health when the new Ministry was established. The only other medical man to have held that office is Mr. Walter Elliot. In 1929 he was returned as Labour member for Swindon, and was Minister of Agriculture in 1930–1. In 1937 he was raised to the peerage—the fifth medical man to be made a peer—and when the National Government was dissolved in 1945 he received a viscounty. He has been Leader of the Labour Party in the House of Lords since 1940.

Dr. J. H. Sheldon, F.R.C.P., will deliver the F. E. Williams Lecture before the Royal College of Physicians of London, Pall Mall East, S.W., on Tuesday, July 12, at 5 p.m. His subject is "The Role of the Aged in Modern Society."

A NOTE ON ELECTRIC AUTOMATIC COMPUTING MACHINES

BY

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Although these devices are sometimes called "electronic" or "mechanical brains," they are designed for one specific purpose, the rapid performance of large pieces of numerical computation. To enable them to do this they are provided with a storage which holds numbers and instructions in a form suitable for triggering off various kinds of activities in the machine. The usual method is first to code the number or instruction as a row of 0's and 1's (by using binary instead of decimal notation in the case of numbers). A large number of stations, say a quarter of a million, are provided in the machine, each of which can be in one or other of two states, called "0" and "1," and a coded number or instruction is set up accordingly on a row of perhaps 40 of these stations. The earlier electronic machines, such as ENIAC, used a pair of radio valves for each station, but this led to a large expenditure of power in running the machine, and other methods have since been invented. The Manchester machine, referred to by Professor Jefferson in his Lister Oration, uses Professor Williams's storage, in which each station is a charged spot on the coating of a cathode-ray tube, large or small for 1 or 0. One tube holds about 2,500 spots. It is likely that all such machines will have a large magnetic storage as a secondary resource. This form of storage is very stable, and requires no power supply for its maintenance once the material is written in, but it is less accessible than electrical storage.

The machine operates by carrying out the instructions one after another, each instruction having some such form as "multiply this row by that row" or "copy this row into that." If it were necessary to put an instruction into the machine for each of the many millions of operations involved in a big computation it would obviously take as long to write in the instructions as to do the computations by hand. The feature that enables the machine, like a properly trained human computer, to work from a short table of instructions is its power of choosing which instruction to perform next, on the basis of the results of work already done, and hence to use the same instruction over and over again.

The speed of the machine is of the order of 1 millisec. per elementary operation, a typical elementary operation being the addition or multiplication together of two numbers of 40 digits (in the scale of 2, =12 in the scale of 10). This is perhaps 10,000 times the speed of a human computer working with a desk calculating machine, without allowing for resting time. This takes no account of the time required to get the problem coded for the machine, but it appears that this is a less formidable problem than was at first supposed, and may become very rapid when standard small routines have been worked out which can be tied together to make large ones. This is a matter on which a rapid increase of information may be hoped for now that machines are actually beginning to come into operation.

The variety of computing problems that can be handled by machines of this kind, by setting up a suitable table of instructions on them, is very great, including the approximate solution of partial differential equations, problems involving large integers (e.g., searching for primes), and questions in more abstract parts of mathematics. Indeed, convincing arguments have been given by Turing for the view that these are "universal" computing machines, in the sense that any well-defined piece of computation whatever could be done on them from a single table of instructions, given sufficient time and a large enough storage for numbers and instructions. In this they differ from such a machine as the ENIAC, which, though very flexible, is limited to a certain (large) repertory of possible assignments.

The expression "piece of computation" has a wider connotation than might at first be supposed, since many pieces of work which have at first sight nothing to do with arithmetic can be "coded" so as to consist of arithmetic operations. For example, the playing of a legally correct game of bridge, poker, or chess can certainly be so coded, and in this sense the machine could play these games. (Whether it could be made to play a good game is a different question.) It is no doubt the possibility of such non-mathematical applications that has led to these machines being brought into discussions on the thinking potentialities of machines, and to the suggestion that the human brain is itself a network of units of this general type. There is evidently a danger here that extravagant powers will be credited to these devices, and conclusions drawn too rapidly about biological analogues; but some caution is also necessary in coming to final conclusions in the opposite direction, on the basis of our knowledge of the behaviour of a small pilot model of this very new kind of machine, designed for a sharply limited purpose, which has been in rather halting action for a few months. The first question that will have to be asked is not "Can all *kinds* of thought, logical, poetical, reflective, be imitated by machines?" but "Can *anything* that can be called 'thought' be so imitated and, if so, how much?" The most promising line here will be to work within mathematics itself, to see how far the work of instruction-table making can be gradually transferred from the mathematician to the machine. The work of modern mathematical logicians gives us a good idea where the barrier is likely to be found, but this is too deep a question to pursue further in this note.

The "Mechanical Brain." The section on the left contains the control circuit, in the middle rack of which is a cathode-ray tube screen with (below) the control desk. The racks on the right-centre of the picture provide the "memory" section. Nearer the camera are racks for calculating circuits. The machine is "fed" at the control desk and the answer is read on the cathode-ray tube screen. For this illustration we are indebted to the Electrical Engineering Laboratories, Manchester University.

CARE OF ELDERLY PATIENTS

LONDON REGIONAL CONFERENCE

The need for co-operative effort in dealing with infirmity in old age was discussed at a conference in London on June 1 attended by over 200 representatives of local authorities in the Metropolitan area, the Ministry of Health, three regional hospital boards, and fourteen grouped hospital management committees, the King Edward's Hospital Fund, and certain voluntary organizations. The convening body was the Regional Advisory Committee for Old People's Welfare, under the auspices of the London Council of Social Service. The conference was presided over by Mr. FRED MESSER, M.P., and Miss D. RAMSEY, respectively chairman and secretary of the National Old People's Welfare Committee.

Limitations and Achievements of a Geriatric Unit

Dr. T. H. HOWELL, who is in charge of the geriatric unit at St. John's Hospital, Battersea, described the growth of geriatric clinics, and referred in particular to the clinic associated with University College Hospital. Another centre was in Liverpool, where a gloomy "chronic" hospital had been changed into a centre of cheerfulness and "re-ablement." His own unit at Battersea arose out of a determination to treat by every possible means chronic arthritic conditions in the old. As a result a number of people who formerly were regarded as hopeless wrecks were relieved of pain and eventually made fit to leave hospital. The trouble was that in solving a medical problem a new medico-social problem had been disclosed, for it often happened that there was no home to which these old men and women could return. In one London hospital 17% of these patients were up and about, needing little or no treatment, but they could not be discharged because there was nowhere for them to go.

At first he had been depressed by the growing waiting-list for admission to beds, but this was met in part by the setting up of an out-patient department combined with the follow-up of patients who had been discharged. This out-patient department had become so popular that a special session had to be set apart for people coming from a distance. The out-patients went through their exercises and their occupational therapy, and received their medicine, and a fair number of them who had been waiting for beds improved to such an extent that their names were taken off the waiting-list.

Some patients suffering from bronchitis were taken into hospital for a short time to enable them to get over the worst of the winter season, and then they resumed their out-patient attendances. In this and other ways a turnover was obtained which had been undreamt-of previously in a "chronic" hospital. There was nothing more heartbreaking for the general practitioner than the problem of the old person who needed more attention than the doctor could possibly secure for him. The geriatric unit had relieved that situation; it had also wiped out the motto, "Keep them in bed and keep them quiet," substituting, "Get them up and keep them interested." That was not enough, and the motto for the future must be, "Catch them quick and treat them early." The only reason why there were not more of these geriatric units was because there were not enough doctors and nurses to run them.

One great necessity, said Dr. Howell, was a half-way house for the accommodation of old people who were not well enough for an independent life in their own homes and not ill enough for hospital. Formerly many such patients would have had to enter public assistance institutions, of which, reasonably, they had a great dread. It was true that some public assistance institutions were like barracks, but others were comparable with old people's homes; he had seen some which he would not mind living in himself. It had been possible in some cases to humanize these institutions, and he saw no reason why this should not be done in all of them.

Long-stay Annexes and Home Care

Dr. E. B. BROOKE, medical superintendent, St. Helier Hospital, Carshalton, reminded the conference of the ageing of the population. One person in seven was over 60, and in twenty years' time it would be one person in five. While he still believed whole-heartedly in the scheme set out by the British Medical Association for a co-ordinated service for old people, he was now pessimistic about the realization of the ideal in its entirety in the measurable future. The scheme proposed that after patients had received every possible "re-ablement," those who still required care and maintenance but not active medical treatment should be moved into long-stay annexes, which would be homely and comfortable for them, and would release hospital beds for other patients. These long-stay annexes, upon which the scheme hinged, he viewed with some misgiving. He doubted whether it would be possible to start enough of them, and he thought some workable alternative should be proposed.

The alternative which he suggested was home care backed by every support the hospital could afford short of admission to its beds. The problem in a nutshell was, "Too many patients in search of too few staffed hospital beds." The obvious solution appeared to be more staffed beds, or, failing that, the use of the available beds to the best economic advantage by providing a turnover of patients and long-stay annexes for cases that might otherwise silt up this steady flow. He mentioned the case of eight old men who had all been in hospital for just over three years until recently, when they were transferred to rather more homely accommodation. Their eight beds in that period could have been used by between 400 and 500 surgical cases. Out-patient facilities, with transport, could keep many patients out of hospital.

At St. Helier's, when the problem was first tackled, there were empty pavilion wards in a near-by hospital which might have been used as a long-stay annexe but it was not possible to staff them. He then realized that the only solution was by out-patient and home care so far as this could be provided. It must be remembered that the elderly patient, the geriatric patient, and the chronic patient were not synonymous terms. Old people, like others, included "acutes" and "chronics." In the later decades obviously a larger number were not able to return to full activity. There was an understandable apprehension lest the admission of old people to hospital should steadily worsen an already bad situation. The majority must be left at home, and there must be reproduced for them so far as possible the facilities available for the more fortunate few who had gained admission.

Hospital Priorities

Meanwhile, said Dr. Brooke, efforts must be concentrated on the individual cases which demanded admission to hospital most urgently on the grounds of medical and social necessity. The following were admitted to the short waiting-list for hospital beds:

(*a*) Those with a reasonable chance of "re-ablement" which would not be available to them other than by in-patient treatment;

(*b*) Elderly patients who needed the added comfort of hospital in the terminal stages of their illness when they would otherwise die under distressing conditions at home;

(*c*) Old people whose admission was necessary for the benefit of the younger generation (a category which required careful scrutiny).

Other priorities, though not necessarily on such a short-term basis, were: (1) patients who were entirely alone in the house at night; (2) patients with double incontinence; and (3) old people who were restless and possibly confused in their senility.

In hospital there were facilities for diagnosis and treatment, nursing care, medico-social advice and information, a bed with clean linen, and warmth and food. The assessment of elderly patients recommended for admission should be undertaken, as in the case of tuberculous patients, at a domiciliary consultation or by transporting the patient to the out-patient department. The family doctor would find that for the patient at home many amenities were available through the resources of statutory and voluntary bodies.

The home help service had made immense strides recently. It had developed certain specialized types—the night home help, the male help, often useful in attending certain male cases, even the help who was colloquially called the "popper-in." A domiciliary laundry service would be of great value. Perhaps the medical officer of health could obtain authority to provide laundry facilities for certain specified types of patient. He also looked forward to a combination of the school meals service and an old people's meals service. He agreed with

Dr. Howell that the great need was for a half-way house for patients neither fully ambulant nor bedfast.

During the past eight months at St. Helier's they had dealt with 203 elderly patients (two women to every man) either by direct admission or by home care or some alternative arrangement. The main problem had been solved for all but 33 of these patients. These 33 were on the current list, but they were not merely a list, they were a "phantom ward." Officers of the hospital made a round among them, and the patients' relatives knew that they could communicate with the hospital at any time by telephone and that any call would have an immediate response.

Home Helps

In the general discussion that followed it was suggested that home helps or home nursing services in one form or another were saving the hospitals the care of many chronic cases and enabling them to direct their activities more economically, therefore a certain amount of money which at present went to the hospitals might well be transferred to these agencies. Mr. R. A. STAMP, chairman of the Health and Hospital Services Committee of the L.C.C., said that the home help service was comparatively new. Some borough councils were active in this respect, others were not. Home helps were doing a lot of the work that the National Health Service Act intended that the hospitals should do. If the four regional hospital boards which covered the metropolis, as well as the voluntary bodies with which his council had contractual arrangements, would be prepared to work out a scheme for dealing with the position, with the Minister of Health brought into the discussions, it might be of very great advantage. It seemed necessary to have some reallocation of financial assistance as well as a redefinition of responsibility.

Mrs. E. WIGLEY, of the British Red Cross Society, described the home visiting work done by that organization. Mrs. A. V. HILL spoke of the great handicap under which those responsible for homes for old people laboured, in that while they started with the more or less able-bodied the inmates became progressively more infirm and feeble and unable to perform slight services for others or even to look after themselves.

Mr. FRED MESSER, M.P., in closing the conference, said that there seemed to be a case for closer co-operation all round. It was remarkable that hostels were available for discharged prisoners but not in any number for old people, an indication that in society fear was a more powerful motive than duty or affection.

INTERNATIONAL HOSPITAL FEDERATION

FIRST POST-WAR CONGRESS

The International Hospital Federation held its first post-war Congress in Amsterdam and Groningen from May 30 to June 4. It was attended by 353 members and their friends from Australia, Belgium, Denmark, Egypt, France, Italy, Norway, Portugal, Sweden, Switzerland, and the United States.

Dr. René Sand, of Belgium, the president, who opened the Congress, was supported by Jonkheer Röell, representing H.M. the Queen of Holland, Patroness of the Congress, Mr. A. M. Joekes, Minister of Social Service, Mr. d'Ailly, Burgomaster of Amsterdam, Dr. Van den Berg, Deputy-Director of WHO, and members of the Dutch Hospital Association.

"The Vocation, Aim, and Task of Hospitals" was discussed by three speakers—Dr. E. Hoelen, medical director, Miss M. Stenvers, matron, and Mr. A. M. Spiering, chaplain—selected by the Dutch Hospital Association. There followed a paper on "The Influence of Economic and Social Changes on Hospital Administration" by Professor F. Pulcher, of Genoa. Then came a paper on "Modern Trends in Nursing Training and Nursing Practice" by Mrs. B. A. Bennett, chairman of the Nursing Service Committee of the International Council of Nurses. The discussion on this subject was opened by Dame Katherine Watt, chief nursing adviser of the Ministry of Health.

The third day was devoted to the discussion of two papers: "The Training of Hospital Administrators," by Mr. George Bugbee, executive secretary of the American Hospital Association, and "Personnel Management in Relation to Hospital Service," by Mr. H. N. Appelbe, personnel manager of St. Thomas's Hospital.

The second stage of the Congress, at Groningen, began with an outstanding address on "Modern Tendencies in Hospital Design, Construction, and Equipment" by Mr. Hugo van Huyck, technical counsellor of the Antwerp Public Assistance Board. Then Dr. Van der Leen, of Holland, gave a paper on "Hospital Budgets and Budgetary Control," and Mr. S. Clayton Fryers opened the discussion on this theme.

The final paper was by Dr. Charles T. Maitland, of the Ministry of Health, who spoke on "The Regional Planning of Hospital and Health Facilities." Here a full and interesting discussion was opened by Sir Ernest Rock Carling and Dr. Vane Hoge, of the United States Public Health Service.

Plans for the Future

The success of the Congress was due in no small measure to the skill with which Dr. René Sand guided its deliberations. The numbers present and the high standard of most of the formal addresses showed how generally welcome was the idea of reviving in this form the pre-war meetings which the former International Hospital Association arranged biannually. They began at Atlantic City in 1929 and continued at Vienna, Knocke-sur-mer, Rome, and Paris in 1937. The Toronto conference of 1939 had to be abandoned, but the American Hospital Association has invited the Federation to hold its next congress in Atlantic City in 1951. For next year a study tour in Scandinavia is proposed. Although the generosity of the Americans in inviting the next congress to the birthplace of the old association was highly appreciated, the proposal provoked a good deal of misgiving in the General Assembly at Groningen in view of the difficulties of exchange which many European countries are experiencing. Members are to send their views to the Provisional Executive Committee before any irrevocable decision on the venue of the next congress is made.

It was hoped to have agreed the constitution of the new Federation at Amsterdam, but this proved to be impossible, and the existing Executive Committee was left in charge. One of the stalwarts of the old International Hospital Association, Dr. O. Binswanger, president of the Swiss Hospital Association, was elected vice-president of the Federation.

Some searching questions about the Federation's financial prospects were put at the final Assembly. The modest £5,000 a year needed ought not to be a major problem. Anyone interested in hospitals can become a member of the I.H.F. for 30s. a year, and out of all the many thousands of hospital workers in the world it ought not to be difficult to finance the Federation by individual subscriptions if Governments prove reluctant to contribute their share. Further information about the Federation can be obtained from Captain J. E. Stone, King Edward's Hospital Fund for London, 10, Old Jewry, London, E.C.2.

HARVEIAN SOCIETY DINNER

THE ARCHBISHOP OF CANTERBURY ON DOCTORS

The Buckston-Browne–Gray-Hill Dinner of the Harveian Society was held in the library of the Royal College of Surgeons on June 16 under the presidency of Dr. Desmond Macmanus. The health of the Society was proposed by the Archbishop of Canterbury, who said that his study of the history of the Society (founded in 1831) was not really a stimulus to oratory. At the time it was founded he noticed they were preoccupied with the problems of renal dropsy, the automatic reflexes of the spinal cord, and the discovery of the parasite of itch. They were also interested then in auscultation, and had only just succeeded in carrying the matter a stage further than Hippocrates did 2,000 years before. But now the advice and knowledge that the medical profession could offer and had was one of the astonishing wonders of modern times. "By your art," he said, "you have increased the expectation of life." Old people, it appeared, could go on living inordinately, and he wondered whether the medical profession in this respect had benefited mankind. "Are there," he asked, "enough young people to carry the burden of the old?" He hoped, however, that nothing would ever persuade the medical

profession to desert its cause of saving human life and to yield to the persuasion of those in favour of euthanasia. Nature he said, was a most ingenious person, and as fast as one disease was overcome Nature seemed to be able to put up another. "There is an active, intelligent adversary trying to defeat you." The advances in medicine made for increasing specialization. Every day the medical man tended to know more and more about less and less. To be an expert on a portion of a person made the specialist less capable of dealing with him as a human being. He was in favour of the old type of form master who taught the boy everything, and so, drawing this parallel, he was in favour of the general practitioner as someone who could treat the whole human being and refer to the expert only when he wanted an expert piece of knowledge or advice. Nowadays no science could live to itself. All sciences ran into each other. The atomic sciences were now becoming involved in ethics. Art, so he understood, could play an active part in healing. Religion also had a part to play in the healing of body and mind. Religion and medicine were beginning to understand they were necessary to each other, and he referred to the work already done by doctors and parsons together in the sphere of spiritual healing.

In response, Dr. Macmanus, the President of the Society, said that every third year it had a general practitioner in the chair. In the library in which they were dining there was on one side a bust of Harvey and on the other a bronze of Bucksten Browne. Dr. Macmanus went on to draw an interesting picture of the conditions of travel in Harvey's day, noting that then, when travel was by horseback, a man had time and leisure to think, to write, and to read. In proposing the toasts of the guests Dr. R. P. K. Coe said that a parson had described the Archbishop of Canterbury to him as "a human bloke." Responding for the guests in appropriate and witty speeches were Vice-Admiral Sir Thomas Troubridge and Mr. Russell Vick, K.C. Among the distinguished gathering present were Sir Henry Dale, O.M., and Sir Alexander Fleming, F.R.S.

Preparations and Appliances

CONTINUOUS SUCTION: A NEW HYDRODYNAMIC METHOD

Mr. J. A. CARR, F.R.C.S., of the Preston Royal Infirmary, writes: Continuous suction has an established position in the treatment of gastro-intestinal cases, especially during the post-operative period, and in cases of intestinal obstruction. The method here described seems to have some advantages over older hydrodynamic methods.

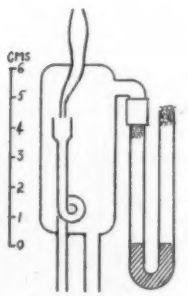


FIG. 1.—Special drip chamber with manometer.

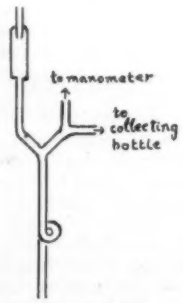


FIG. 2.—Basic diagram.

Principle.—A fluid of low surface tension runs from a reservoir, at a rate controlled by a screw clip, to a dripper from which the drops enter a long tube, where the formation of a series of columns of fluid separated by air is assured by a loop. The weight of these columns causes them to descend and to draw the interspersing air with them. If the apparatus is closed to the exterior a progressive reduction in pressure occurs, and this is used to aspirate the gastro-intestinal contents from the patient to a collecting-bottle. A mercury manometer indicates the fall in pressure, and the amount of mercury is so adjusted that when the reduction in pressure is equal to about 4 cm. of mercury all the mercury has been brought into one side of the manometer and air bubbles through. A reduction in pressure of 4 cm. of mercury is adequate for aspiration; a greater reduction produces an undesirable variation in the rate of the drip. Although this apparatus bears a superficial resemblance to Sprengel's pump it differs from it in that the pressure reduction is determined by the combined length of the columns of fluid and not by the pressure of the supply.

Apparatus.—An open-topped reservoir of 500-ml. capacity is used. The fluid is 25% spirit in water and is coloured with ink. The special drip chamber (Fig. 1) may be obtained from Messrs. Brady and Martin, Ltd., of Northumberland Road, Newcastle-upon-Tyne, 1, or the equivalent may be assembled from drip connexions, Y tubes, etc. (Fig. 2). The manometer, which is separate, has a bore of not less than 4 mm., or bubbling will not occur, and has a cotton-wool plug at each end to make the bubbling quiescent and to prevent loss of mercury. The descending tube should have a bore of about 2 mm.—translucent plastic tubing is better than rubber—and should be about 150 cm. long. There is no need for its end to be submerged. The coloured fluid is collected in a bottle and is used to refill the reservoir over and over again. The bottle to take the fluid from the patient has a capacity of about 500 ml. Care is taken to make all the bungs and connexions airtight, and to see that the cotton-wool plugs in the manometer are dry.

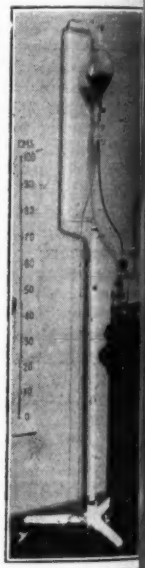


FIG. 3.—Assembled apparatus.

Use.—When the apparatus has been set up (Fig. 3) the fluid is allowed to drip through quickly until air is bubbling through the mercury. The airtightness of the apparatus is then tested by occluding the tube to the patient and stopping the drip. Leakage is shown by a gradual fall in the mercury level, and should be traced and prevented. The flow is then adjusted to about 30 drops a minutes, and is maintained at that rate.

Comparison With Other Methods.—Wangensteen's bottles and siphonage with an air trap have two particular disadvantages: first, the time at which they will require attention cannot be predicted; secondly, this attention is somewhat complicated. The new method works in the manner of a simple drip for infusion and needs the same attention. Satisfactory working in all cases depends on care in the original assembling of the apparatus.

This apparatus has been in routine use in the wards of the Preston Royal Infirmary for the past six months, and has proved both satisfactory and popular.

I would like to express my thanks to the numerous members of the staff of the Infirmary who have co-operated with me in the construction and use of this apparatus.

Owing to the difficulty of pricing the 170,000,000 prescriptions year being issued under the National Health Service, the Ministry of Health has decided that from June onwards those with a net ingredient cost of 5s. and over (including prescriptions carrying special fees and D.D.A. and urgent fees) will be priced in full, while of those with a net ingredient cost of under 5s., 20% will be priced in full each month, the chemist being paid for the other 80% at his own average cost for the 20% fully priced. At present prescriptions with a net ingredient cost of over 2s. 6d. are fully priced, and 25% of those under 2s. 6d. The change has been made necessary because of lack of staff and accommodation, but the Minister is trying to increase the number of staff employed on this job.

Correspondence

Ogilvie's Syndrome

SIR,—Five cases of intestinal ileus due to sympathetic deprivation have now been described in the *Journal*. Both in Ogilvie's[1] original case and in the later cases[2 3] the interfering lesion was malignant invasion of the posterior abdominal wall. Although "Ogilvie's syndrome" has not been precisely defined, it is suggested that the essential feature is the production of intestinal ileus by sympathetic involvement rather than the malignant nature of the causative lesion. The following case is therefore suggested as an example of the condition, although the "invasion" of the posterior abdominal wall was due to a haemorrhagic, and not a neoplastic, process.

The patient, a man of 60 years, was submitted to herniotomy for a right inguinal hernia of two years' duration. The operation was performed under spinal anaesthesia. An indirect sac was found and excised. Immediate post-operative progress was uneventful, but on the fifth day he commenced vomiting copiously, and this continued with rapid deterioration of his general condition until death occurred 11 days after operation. During this time the patient was constipated, but passed much rectal flatus. Blood urea on the day preceding death was 364 mg. per 100 ml.

Post-mortem Findings.—The body was that of a very obese man, with a barrel-shaped chest and severe finger clubbing. The heart showed moderate left ventricular hypertrophy. The lungs showed terminal congestion and oedema superimposed on chronic bronchitis and emphysema. The pleural cavities were almost obliterated by old fibrous adhesions. A large extravasation of blood was present under the peritoneum throughout the lower half of the right anterior abdominal wall, spreading round into the posterior abdominal wall and also projecting downwards into the right side of the pelvis and passing upwards to form a large retroperitoneal haematoma 6 in. by 1.5 in. (15 by 3.75 cm.) in front of the right psoas sheath. The operation site appeared to be normal, there being no collection of blood in the subcutaneous, fascial, or muscular layers. The stomach showed slight congestion. The small intestine showed great dilatation of its entire length, with the exception of the terminal 6 in. (15 cm.) of ileum, which was involved in the extravasation into the posterior abdominal wall but which showed no organic obstruction. The colon showed moderate dilatation down to the lower sigmoid portion, the distension being gaseous, with only a small amount of faeces present. No twisting, bands, masses, stricture or faecal collections were present to account for organic obstruction.

This case occurred in June, 1947, before Ogilvie's syndrome was described. At this time the ileus was attributed to interference with the nerve supply to the intestine, but it was not decided whether this was due to sympathetic involvement by the haematoma of the posterior abdominal wall or to local interference with the nerves of the terminal part of the ileum which were directly involved in the extravasation. In view of the viability of the affected portion of gut and the absence of apparent interference with local blood supply it may be considered unlikely that the local nerves would have suffered selective mechanical damage, and it is now thought more probable that the "invasion" of the posterior abdominal wall by the haematoma might have been responsible for the ileus by a similar mechanism to that described by Ogilvie. Unfortunately no detailed dissection of the abdominal autonomic system was performed.—I am, etc.,

Grimsby. L. M. GERLIS.

REFERENCES

1 *British Medical Journal*, 1948, **2**, 671.
2 Dunlop, J. A., ibid., 1949, **1**, 890.
3 Handley, R. S., ibid., 1949, **1**, 891.

Research in Renal Disease

SIR,—Writing as an obstetrician with a keen interest in renal problems, I wish to add to the support already given to Dr. Osman's major thesis (May 21, p. 910). Specializing in clinical nephrology is in general justified, (1) by the vastness of the subject and of its literature, and (2) by the wide prevalence and often serious character of renal disorder.

In my own particular field I have long been concerned with the renal changes of pregnancy, but despite extensive reading and consultation with others I still lack final answers to many of my questions in the fields of renal anatomy, physiology, pathology, and so on. This experience, which I must share with many others, is in part due to the fact that there are few with sufficiently full time for the renal work, and in part to the fact that many gaps still remain in our knowledge which are all too slowly being closed by research.

An improvement can readily be made and maintained if knowledge is synthesized and further research encouraged in such a centre as, I imagine, Dr. Osman envisages. Then the lonely furrow which he himself has ploughed for so many years will be joined by several new ones, and the consequent harvest should be great. With all due deference I should like to suggest that the three Royal Colleges could find in the synthesis of knowledge about the kidney, and encouragement of research on the problems presented by it, a very worthy field for a joint effort. The synthesis of existing knowledge, as a beginning, could result in the production of a very much-needed book, in which the artificial separation of the three aspects of the subjects could be overcome in the ultimate interest of the patient. The encouragement of research would be a longer-term policy, but the initial consideration of it could be undertaken without much delay.—I am, etc.,

London, W.1. JOHN SOPHIAN.

Death following Neostigmine

SIR,—In the cases described by Professor R. R. Macintosh (May 14, p. 852) and Dr. J. Clutton-Brock (June 4, p. 1007), though it was a mixture of neostigmine and atropine which was injected, death appears to have been attributed exclusively to the neostigmine. The atropine is presumably incorporated in such injections to diminish the cardiac and other untoward effects of the neostigmine. In fact, however, it is quite likely to do the reverse, and we feel that this should be pointed out.

Though we have no experience of intravenous atropine there is no doubt from numerous controlled experiments on healthy people that the primary effect of a subcutaneous dose of atropine sulphate (0.5 mg. per 50 kg. b/w) is to slow the pulse, sometimes very markedly, by what we have always supposed to be medullary (cardiac vagus centre) stimulation. This effect is well known to pharmacologists. It appears quickly and is at its maximum about 10–15 minutes after the injection. The pulse rate then either returns to normal and remains there, or it may rise significantly above normal for a variable period. The rise above normal is, of course, due to the peripheral blocking effect of the drug on the muscarinic action of the acetylcholine liberated by the tonic activity of the cardiac vagus: this effect, with the dose used, is usually slight.

Thus atropine administered subcutaneously first increases the effect of the cardiac vagus: this action either ceases or, more likely, is masked by the subsequently established anti-acetylcholine effect of the drug. Though there is considerable individual variation in the degree of response in such experiments there can be no doubt about the sequence of events.

It therefore seems likely that a similar primary vagus stimulation with secondary partial vagus blocking may occur when atropine is given intravenously and that the primary effect in these circumstances would begin almost at once. If such central stimulation does occur on intravenous injection of atropine, then, clearly, its effects will be markedly potentiated by neostigmine. This would also apply to any central action of atropine tending to increase the tone of bronchiolar muscle. Hence atropine, administered simultaneously with neostigmine, far from preventing the unwanted effects of the latter drug may, at first, anyhow, be more likely to increase them. This may have been an important factor in causing death in the two cases cited.

Apart, however, from the possibility of such a potentiation of the effects of neostigmine arising from the central action of atropine, the peripheral anti-acetylcholine effects of therapeutic doses of atropine take some twenty or thirty minutes to be fully established. It is, therefore, not to be expected that the unwanted cardiac and bronchial action of neostigmine would be prevented by giving the atropine along with it. The importance of this point is increased by the known liability of both tubocurarine and neostigmine to produce bronchoconstriction by peripheral mechanisms.

The simultaneous intravenous administration of atropine and neostigmine would thus seem to be contraindicated on two grounds: first, that the atropine is likely by its central action to produce an immediate potentiation of the cardiac, and perhaps bronchiolar, effects of the neostigmine; and, secondly, that even if the atropine does not do this it is unlikely to produce an immediate antagonism of the unwanted peripheral effects of the other drug.—We are, etc.,

W. A. BAIN.
Leeds. J. L. BROADBENT.

Paediatrics and Family Practice

SIR,—In the letter from Drs. S. D. M. Court and F. J. W. Miller (June 4, p. 1006) I note the sentence: "We are now trying to discover the amount and kind of disease in children encountered by practitioners in different kinds of practice, and Dr. Naish could probably help us on this point straight away." I would like to assure them at once that if there is any information in my notes that would be of use to them it is at their disposal. In addition, I am wondering what they mean by "different kinds of practice."

It is obvious, easy, and therefore usual, to classify practices according to the patients or to the milieu—uneducated/educated, rural/urban, etc. I grow more and more convinced that it is just as important to classify practices according to the outlook of the doctor. Whether by training, by temperament, or by the influence of individual teachers, doctors are as a rule definitely orientated either toward the maintenance of health or toward the cure of disease; and in a very short time they impose something of their own outlook on the practice they run. The one extreme, where feckless parents call one in frantic alarm to see cases of late disease, is not merely an uneducated practice, but an "uneducated-curative" practice. The other extreme, where responsible parents cope themselves with minor ailments and call one early when they are puzzled, is an "educated-preventive" practice.

I am uncertain in what order to place the two mediate items in this classification. During the war, however, I had charge of some evacuees from the East End of London who were obliged to occupy condemned premises and to rear their babies in the most unpromising circumstances. They did it extremely well, and produced some of the most careful and accurate records of home test-feeding I have ever seen. What "kind of practice" would Drs. Court and Miller consider these slum evacuees to constitute? In my nomenclature they would be an "uneducated-preventive" practice; and they lead me to think that possibly better results are to be expected from that than from an "educated-curative" practice.

To Dr. Rosefield's query in the same issue (June 4, p. 1006) about the regular attendance of children over one year, I would reply that possibly he is asking too much. I have only advised my mothers to bring the older children for examination about once in six months, and so far I have found them on the whole willing and able to do that. I must admit, however, that my experience of this problem is not nearly so long as his.—I am, etc.,

York. F. CHARLOTTE NAISH.

Diathermy Prong Forceps

SIR,—Mr. Wilson H. Hey (May 21, p. 911), during his long and distinguished career, has rendered surgery a great service. He has been an inspiration to many surgeons, who owe him much for the benefit they have derived from his stimulating ideas and the example of his surgical skill. My debt is greater than most, for he has been my teacher, colleague, and friend; I shall never cease to be grateful for the privilege of my association with him.

One of his most outstanding contributions to surgery has been his constant advocacy of diathermy for sealing vessels during operations. The diathermy haemostat has not been widely used because no person published its advantages until I did so in 1944.[1] Our American colleagues who were over here during the war were so intrigued by the instrument I used that they persuaded me to make the idea more widely known; since when I have had requests from all over the world for reprints of my paper.

With regard to the specially designed diathermy haemostat I have found in practice that it is neither as satisfactory nor as sound mechanically as the home-made instrument which I described. I base this conclusion on the following points:

1. In the home-made instrument the lead lies neatly and unobtrusively in the palm of the hand and there is no danger of its catching on the towels, etc., or hindering the movement of the fingers; it is completely under control.

2. (*a*) In the specially designed instrument the lead is connected to the periphery, where it acts as a constant obstruction to manipulation of the instrument and movement of the fingers. (*b*) On account of the protuberance of the attachment the patient is exposed to the danger of accidental burns. (*c*) The lead being attached at the extremity of the instrument it can exert a powerful leverage which tends to restrict manœuvrability, usually at a moment when slickness is all-important. (*d*) The lead attachment screw sometimes works loose during sterilization or whilst in use, and might conceivably get lost in the patient's abdominal cavity.

With regard to the insulating tape used in the home-made instrument, this is only one layer deep and is not used to bind the junction to the haemostat but only to cover the bare wire to prevent damage to the surgeon's gloves. The insulating tape is prevented from becoming unstuck by overwinding with a length of cord or silk (any material will cover the junction equally well).

The question of sterility was raised by a colleague of mine some time ago and we made the following tests. After boiling we had cultures made of washings taken from beneath the tape. We found that in no case were any organisms grown in spite of our having smeared the depths of the tape with cultures of staphylococci, streptococci, and the spore-bearing bacilli. Fifteen cultures in all were made. For me this is proof that boiling is a satisfactory method of sterilization.

It is my earnest hope that this correspondence will encourage surgeons to test my diathermy instrument and those described by Mr. Wilson Hey (June 21, 1947, p. 897) and Mr. A. Wilfrid Adams (April 9, p. 631). When they have tried out the respective instruments it would be interesting to have their views. Only in this way can the greatest advancements in surgery be achieved.—I am, etc.,

Sheffield, 1. DAVID AIKEN.

REFERENCE

1. *Lancet*, 1944, **2**, 212.

Reliability of Laboratory Tests

SIR,—In your annotation on the reliability of laboratory tests (April 30, p. 766) you close with the statement, "If the results of any test are to be of value to the clinician, then the test must be able to detect differences smaller than those which are of clinical significance. It seems that not all laboratory tests meet this requirement, for some of them demand more skill than an average laboratory technician possesses." A close perusal of your remarks and of the paper by Biggs and MacMillan fails to reveal any foundation for such a statement regarding medical laboratory technicians in this country.

The systematic training received by medical laboratory technicians in this country and America was admirably compared and described by Whitehead (*Lancet*, 1949, **1**, 113), together with a summary of the requirements for the diploma of the Institute of Medical Laboratory Technology. Although these requirements are approved and recognized by the majority of pathologists and employing bodies as a means of ensuring a reasonable standard of competence, unfortunately a few pathologists and official bodies appear to consider these requirements too ambitious.

In view of these facts, one feels that an explanation or some amplification of your concluding paragraph, quoted above, will remove any suspicions of an ill-conceived or biased review.—I am, etc.,

Stanmore, Middlesex. R. J. BROMFIELD.

*** No criticism of the work or training of laboratory technicians was intended in the annotation from which Mr. Bromfield quotes the final sentence. The point we wished to emphasize was that the reliability of the results of laboratory tests could be ensured by the use of methods which give the best results in the hands of the average laboratory worker.—ED., *B.M.J.*

Dried Plasma for Domiciliary Midwifery

SIR,—I have read with interest Dr. C. T. H. Whiteside's letter (June 4, p. 1005) on the above, and I feel that I must strike a note of warning. I agree that facilities for resuscitation of patients suffering from post-partum haemorrhage are important, but I feel very strongly that the use of dried plasma will do much more harm than good.

For some years now I have avoided the use of plasma, primarily because I have so often seen it fail. Apart from the dangers of jaundice, which an increasing volume of literature has shown to be very real, the fact is that plasma fails to resuscitate these patients. The woman who has lost blood in the third stage of labour requires above everything oxygen to maintain the integrity of the vital centres in the medulla, and this plasma cannot give her. It will increase the blood volume and perhaps produce a temporary improvement in the circulation, but this is only temporary and rather spurious, and again and again I have seen a secondary collapse from which it has been impossible to rescue the patient.

At a recent meeting of the Edinburgh Obstetrical Society Professor Kellar said that the use of plasma had been given up entirely at the Simpson Memorial Hospital and that in several of the cases on which it had been used unsuccessfully post-mortem examination had revealed suprarenal haemorrhages. Whilst a direct cause and effect association could not be substantiated, none the less, plasma had been entirely replaced by saline and whole blood.

In almost all parts of the country to-day "flying squads" are available in one form or another, with the resources of blood banks behind them, so that in any case where it is necessary it should be possible to undertake transfusion of blood in a comparatively short time, and the patient's condition in the meantime can be maintained if necessary with intravenous saline injections. This, unlike plasma, carries a negligible risk of infection and, moreover, again unlike plasma, is rapidly cleared from the circulation to make way for subsequent blood transfusion. The use of morphine also in these cases will help to delay the development of shock and tide the patient over until blood is available.

May I suggest, therefore, that Dr. Whiteside will find that his results will be much better if instead of plasma in his special bag he will carry two pints of normal saline and will make use where necessary of the emergency services in his area.—I am, etc.,

Inverness. J. A. CHALMERS.

Surgery at the Front

SIR,—I have read the obituary of Mr. Owen W. Richards (May 21, p. 915), and I think you will find in the records that the first abdominal and chest unit in the forward area was opened by the 26th Field Ambulance, 8 Division, at Bac St. Maur, north-west of Merville, in early September, 1915.

In the winter of 1914–15 I suggested to our C.O., Lieut.-Col. A. Milne Thomson, C.M.G., that the abdominal cases were dying of haemorrhage, and that if operated upon in the forward area results would be better. He gave me permission to perform necropsies, which demonstrated that haemorrhage from the small mesenteric vessels was the chief trouble, in many cases only a small part of the bowel being perforated. First it was suggested that the necessary sterile materials should be sent forward in drums from No. 6 C.C.S., Merville, or the advanced depot of medical stores, as we had not space available in a mobile unit to transport autoclaves, etc. In January, 1915, by permission, I called at the War Office, and on explaining our difficulties was issued with various instruments. In early September, 1915, our unit was moved to a factory in Bac St. Maur, where, besides opening our usual dressing station, etc., Col. Skinner, D.D.M.S. 3rd Corps, ordered us to prepare for an operating unit.

The main weaving shed of the factory had central heating, electric light, and much machinery in it; a portion sufficient for 30 beds was sectioned off by green hessian canvas. An operating room was prepared in a corner of the next shed near a large window. Lieut. J. Fraser, later Sir John Fraser, was attached to us as surgeon, and four nursing sisters also, one a regular. Shortly afterwards Lieut. Fraser was sent to another area and Lieut. Sampson (now a Birmingham surgeon) took his place. This factory was about 5,000 yards from the front trench, and I believe Col. Skinner had some difficulty in persuading higher authority to allow sisters so near the front.

The abdominal and chest cases were admitted from the whole Corps area, and when fit to move were transported by barge (specially equipped) to St. Omer and the sea. In spite of absence of blood transfusion successful results were obtained at first in 27%, then up to 47%, of all cases operated upon. In February, 1916, the factory was heavily shelled—glass and debris flying in the operating room where an operation was being performed. Of the only three officers of the unit available Lieut. Samson was operating, I (acting O.C.) was assisting, and Lieut. Henry was giving the anaesthetic, so it was fortunate that Col. Skinner was visiting at the time and could at once arrange for the urgent evacuation of the movable cases to a farm 300 yards away. Later, the whole unit moved with the 8th Division to another area. Probably this experience resulted in the higher command not allowing nurses so far forward at a later date. Great praise and thanks were given to the unit for the way in which all ranks carried on the work of the special ward, and for the way in which the movable cases were evacuated, by the A.D.M.S., the D.D.M.S., and the D.M.S. 1st Army. Lieut. Samson received the M.C., and the regular sister in charge of the ward and the operating theatre sister received the R.R.C.

Among the interesting cases were the following: one fore-and-aft penetrating bullet wound of the abdomen, not injuring the bowel and with practically no bleeding; the other a 10-in. (25-cm.) accidental bayonet wound of the abdominal wall, through and through but not entering the peritoneal cavity.—I am, etc.,

Mentone, France. E. ALDERSON.

Women War Captives in Russia

SIR,—With reference to the article entitled "Women War Captives in Russia" by Dr. R. F. A. Dean (April 23, p. 691) concerning the conditions of life of German women in labour camps in the U.S.S.R., I should like to add a few remarks from my own experience.

As a member of the Polish underground army I was deported to Russia in April, 1945, and I stayed in various camps until November, 1947. I found myself among prisoners of war of many nationalities, as well as in camps with a majority of German civilians. I can fully support the evidence given by the said German women, but I should like to point out that no definite and general conclusions can be drawn from such evidence as to conditions prevailing in Russian camps. These conditions vary considerably, not only according to different geographical and local circumstaces, but, above all, they depend on the attitude of the Soviet authorities towards the given group of prisoners at the given moment. The German women described in your article were lucky to find themselves in mild circumstances. They estimate the number of deaths in transport on their way to Russia as 2% to 2½% only. This percentage can be increased twenty-fold and still remain true: in the summer of 1945 I personally took part in a medical examination of a group of about 1,000 Esthonians who came to Stalinogorsk Camp on their way from East Prussia to central Russia. They had walked about 800 miles, and the death rate among them was over 50%.—I am, etc.,

Wembley, Middlesex. MIECZYSLAW PESZCZYNSKI.

Threatened Abortion Simulating Ectopic Gestation

SIR,—The following case is reported to illustrate how regurgitation of blood into the Fallopian tubes in threatened abortion may simulate ectopic gestation.

A patient, aged 23, para 2, was admitted to hospital on April 20, 1949, complaining of lower abdominal pain following seven weeks' amenorrhoea, the last menstrual period being on Feb. 22, 1949. The periods had previously been quite regular and of normal amount. On March 7 she had a slight show of dark blood lasting one day, and another show lasting three days immediately prior to admission. The lower abdominal pains, which were mainly in the left iliac fossa, had been present on and off for one month, and she described them as period pains which had now become severe. There had been no vomiting or dysuria.

Abdominal palpation showed generalized tenderness in the lower abdomen, with well-marked guarding in the left iliac fossa. Per vaginam some dark blood was visible, the cervical os was closed,

and movements of the cervix caused severe pain. Bimanual examination of the uterus, which was difficult because of extreme tenderness, showed the uterus to be only slightly enlarged. The right fornix was normal, and on palpation of the left fornix the presence of a small mass was suggested; this was too painful to be accurately defined. Her temperature was 98.4° F. (36.9° C.); pulse 80, blood pressure 120/70. There were no abnormalities in the urine. In view of the history, her lower abdominal pain, and the marked tenderness on vaginal examination, it was decided she was a case of left tubal gestation, and laparotomy was performed on April 20. On opening the abdomen, the uterus appeared to be about 8–10 weeks pregnant; no ectopic pregnancy could be found, but about 2 oz. (57 ml.) of altered blood was noticed in the pouch of Douglas. Careful inspection of the left Fallopian tube showed it to be not enlarged, injected, or swollen, but of a beaded appearance and dark blue in colour due to the lumen being intermittently distended with blood. On milking the tube about 2–3 ml. of dark blood oozed from the abdominal ostium. The right tube appeared normal, but on milking it towards the abdominal ostium two or three drops of dark blood were also produced. The ovaries appeared normal. The pouch of Douglas was mopped out and a normal appendix removed before closing the abdomen.

The patient had a slight loss of blood per vaginam the day following operation, but convalescence was otherwise uneventful. There has been no recurrence of her abdominal pain, and the pregnancy is continuing satisfactory to date.

I consider this patient to be a case of threatened abortion with regurgitation of blood into the Fallopian tubes, causing distension of the lumen and hence producing symptoms and physical signs identical with an early ectopic gestation.—I am, etc.,

Stoke-on-Trent. H. D. FREETH.

Breast-feeding

SIR,—The modern decline in breast-feeding is commonly attributed either to the ignorance or to the apathy of the family doctor. Many of us, who frequently condone the action of the distraught or unwilling mother in "putting the baby on the bottle," feel that our argument for breast-feeding lacks conviction, knowing the high incidence of breast infection. In recent years breast-feeding has undoubtedly carried with it a considerable hazard to health. In spite of penicillin and sulphonamide therapy breast abscess still occurs too frequently, and we are certainly ignorant of how it does occur.

It was with this problem in mind that I read Dr. F. Charlotte Naish's admirable book, *Breast Feeding*. In discussing mastitis and its prevention, Dr. Naish (pp. 63 and 127) refers to the value to be derived from the study of dairying methods. It appears doubtful, however, whether Dr. Naish and her farmer's wife are referring to the same disease process. The "milk fever" of the dairy farmer has no relation to mastitis, and, to the best of my knowledge, the blood-calcium depletion seen by the veterinary surgeon in "milk fever" has no counterpart in medical practice. The validity of Dr. Naish's deductions is therefore in question, however successful she has been empirically. Dr. Naish has done a notable service in showing what can be done in general practice. It is admiration for her work that has prompted me to point out this flaw in its excellence.—I am, etc.,

Thornton, Fife. JAMES B. FLEMING.

"Cord Round the Neck"

SIR,—Further to my letter in the *Journal* of May 4, 1946 (p. 701), I have again observed this abnormality in the same multipara with the history of two stillbirths.

The patient (7-para) was delivered on Nov. 4, 1944, by forceps under chloroform of a stillborn female, death being caused by torsion of the cord. On March 29, 1946 she delivered naturally a stillborn male; again death was caused by the cord round the neck. On Sept. 21, 1947, she gave birth to a live-born male child without this abnormality. On June 3, 1949, a stillborn female child was born naturally with the cord round the neck. Again the child had been strangulated.

I venture to suggest that delay in the second stage associated with foetal distress may be attributable to cord round the neck, and, where suspected, should be treated by early caesarean section to ensure a live child.

My thanks are due to Dr. Archibald Neville McLellan for help with this patient.

—I am, etc.,

Harthill, Lanarkshire. S. H. P. MCLAUCHLAN.

Fatal Myelitis after Antirabic Vaccine

SIR,—Dr. I. Ansell (Aug. 14, 1948, p. 338), describing a fatal case of myelitis after antirabic vaccine, concludes that "antirabic treatment should be given only when the correct indications are present. A healthy dog should be kept under observation for the usual ten days before treatment is begun except possibly in cases of severe bites on the face."

As far as I am aware, it is still the practice in most centres responsible for treating persons bitten by dogs and other animals not to wait until the disease declares itself in the dog before commencing treatment, for the reason that, although the virus is believed to reach the brain via the nerves, the time it takes to do so varies over wide limits (days, weeks, or months). Consequently it seems to me that as this rate of travel of the virus can only be guessed at in the majority of cases the withholding of treatment for some days may amount to jeopardizing the life of the patient, who has no chance of surviving once the disease does develop.

Since the incidence of neuroparalytic accidents following antirabic vaccine is one in many thousands and the mortality from all types about 25%, I cannot help feeling that Dr. Ansell's conclusion is likely to be misleading, and almost comparable to advising a patient not to undergo what might prove to be a life-saving operation merely because one person in many thousands dies unexpectedly during the induction of the anaesthetic.

I would welcome your opinion on this point, which I feel is important, because so few practitioners have a clear idea of what should best be done in bites from animals. Rabies is a disease in which one cannot afford to take a chance.—I am, etc.,

Hong Kong. E. F. DUCE.

Thiosemicarbazone

SIR,—The letter from Dr. L. Fish (June 4, p. 1005), together with your note following it, is timely. Perhaps the readers would be interested to hear that a whole day was devoted to the chemotherapy of tuberculosis at the recent Congress of Internal Medicine at Wiesbaden, which I attended. The treatment of pulmonary disease by thiosemicarbazone held an extremely prominent place in the papers and discussions, which were initiated by Professor Domagk from the pharmacological aspect and Professor Heilmeyer from the pathological aspect.

Apart from the general work on this group of substances (which are directly derived from sulphonamides), the only reference I know to its use has been in a lecture given in New York in June, 1948, by Dr. D'Arcy Hart.

The Germans place these drugs—mainly one which they call "T.B. 1"—midway between streptomycin and para-aminosalicylic acid in their chemotherapeutic efficiency, and it would seem that very much work is needed to be done in this country on the subject if our armamentarium in the treatment of tuberculosis is to be completed. It is proposed shortly to do a small clinical trial with thiosemicarbazone if arrangements for its supply can be adequately made, and this will be the subject of a future communication.—I am, etc.,

London, S.E.12. M. M. NAGLEY.

Routine Medical Examinations

SIR,—With reference to Dr. R. Frank Guymer's letter on routine medical examinations (June 4, p. 1007) and the application of Pulheems to industry, I am sure Dr. Guymer would be interested to know that we have been applying this system at Messrs. Taylor Woods, Ltd., Hosiery Factory, Enniskillen, for two years. In conjunction with the personnel department a series of profiles for the various jobs have been made.

We find that the system is almost an essential, as some of the jobs are very highly skilled and long periods of training necessary. We believe it has helped to avoid labour turnover and absenteeism. Three hundred and fifty potential employees have been examined up to the present. This number we consider insufficient, but when the 500 is reached we hope to have some figures to substantiate our belief in this system as applied to industry.—I am, etc.,

Enniskillen, Co. Fermanagh. HAROLD K. ARMSTRONG.

Marriage Guidance by Doctors

SIR,—At the Conference on Marriage Guidance held recently at Scarborough I urged the training of doctors in sex problems, and, as rather garbled versions of my remarks have appeared in the Press, may I restate the position, and suggest a possible solution ?

A recent annotation in the *Lancet*[1] commented on the lack of sex education given to medical students to-day. It is a fact that in most medical schools no teaching whatever is given on the technique of sex, on contraception, on abnormal psychology, on pre-marital advice, or on marriage guidance. The student's general training is based on disease of organs and not on dysfunction of the individual—still less so when it affects two individuals composing the single entity of a marriage.

Most doctors who have acquired any knowledge of sex by the time they graduate do so not by any organized instruction on the subject but by private enterprise. When patients seek advice on these subjects the doctor is in a dilemma, because not only is his knowledge inadequate, but, worse still, he may have inhibitions about the subject. As a result it is not surprising that Stallworthy and Green-Armytage[2] can quote 4–5% of all cases attending sterility clinics as being *virgo intacta*—a figure which I can confirm from my own clinic.

The following other examples are illustrative of inadequate or wrong advice :

(1) A woman was referred for leucorrhoea. I removed a foul object, which proved to be an unrolled washable condom. She explained that she had been advised at another hospital not to have more children. The R.S.O. said her own doctor would advise, who in turn suggested that her husband go to the chemist and he would advise. The chemist merely handed over the sheath, and, not knowing what to do with it, this pathetic couple decided that the vagina was the correct place in which to put it.

(2) In two cases referred on account of sterility each patient had had curettage under anaesthesia elsewhere, without the gynaecologist realizing that she was *virgo intacta* and that he was the first to rupture the hymen. After suitable advice each became pregnant.

(3) In several other cases girls requesting pre-marital examination had been told elsewhere to have excision of the hymen. Seeking a second opinion before risking an anaesthetic and operation, I was consulted and advised digital self-dilatation, which in a period of about 10 days produced an adequate result. Such advice as these girls had previously received might be tragic—and yet it is a common happening to those who know of the ignorance and general reluctance of doctors to deal with these problems adequately.

It is realized that not all doctors are temperamentally suited for this type of work. Nevertheless all medical students should be given sufficient basic training to enable them to recognize the nature of the problems which may confront them later, and know where to send such people, even though they themselves may never wish to undertake treatment. The present overcrowding of surgeries deters even those few who are interested from dealing with such cases.

The answer to this problem must be provided in special centres at which such work could be undertaken by those fitted for it, and training centres for doctors also established there in circumstances where the time available per case would be adequate. This would also overcome the ethical problem of a doctor who does marriage guidance work being accused of poaching on his colleagues' patients if he sees them at his own surgery. It also leads to the conclusion that doctors in charge of such centres should have special training in marriage counselling, organized and approved by a body of established authority. Such a body would appear to be the National Marriage Guidance Council, which has already worked out a technique of training and has the experience in this field of work to appreciate the difficulties. Most emphatically the organization of training at and staffing of such centres is not a function for a hospital board, local authority, or government department ; it is highly delicate work, requiring special qualities in both the training and personality of the doctor.

The problem is an urgent one, and I would urge the immediate calling together of a conference of interested parties, perhaps under the auspices of the National Marriage Guidance Council, to study the possible solutions.—I am, etc.,

Manchester, 8. BERNARD SANDLER.

REFERENCES

1 *Lancet*, 1949, 1, 744.
2 Stallworthy, J. (1948). *J. Obstet. Gynaec. Brit. Emp.*, **55**, 172.

London Lock Hospital

SIR,—We must all join with your correspondent, Dr. Raymond Oliver (June 4, p. 1004), in regretting the possible disappearance of the London Lock Hospital in its present form. Apart from his letter, the medical press has seen a number of letters and editorial articles to the same effect since the North-West Metropolitan Regional Hospital Board made public recently the recommendation that it has under consideration to transfer the buildings of the Lock Hospital to the West End Hospital for Diseases of the Nervous System.

Such "change of user" of hospital premises will no doubt take place not infrequently throughout the country as the regional boards consolidate and co-ordinate their hospital services ; these changes are inevitable with the declining demand for some types of hospital and the maintained or even increasing demand for other types. It is a great social gain that modern therapy has made in-patient treatment in venereology less necessary than hitherto, though it is sad to see as a consequence the need for famous institutions in their old forms pass away ; we find this sad just as our great-grandfathers found the inevitable disappearance of the sailing ship and the stage coach equally sad and equally difficult to accept.

Venereology is not the only branch of medicine to find to-day less need for beds ; there has been a similar sudden collapse in the demand for fever-hospital beds. Whilst the fever hospitals are now turning over a high percentage of their beds to other work, we may spare a pang of regret for the practitioners of this branch whose field of future work and interest has so suddenly contracted.

In regretting the changes necessary in some institutions do not let us forget the pressing need of those for whom a demand continues and who may have less resources than before to meet it. That the needs of the West End Hospital for Diseases of the Nervous System have been under consideration by the North-West Metropolitan Regional Hospital Board has been made public. Little attention has been paid in the medical press to the serious position of this hospital and its work. Before the last war this hospital for organic diseases of the nervous system was working in central London to the limit of its capacity in neurology and neurosurgery, for the practice of which there are certainly not too many beds in London. The hospital was divided into two parts—out-patients in Welbeck Street and in-patients in Regent's Park—and its war risks may have been thought to have been minimized by such "dispersal." However, in 1940 its out-patient premises received a direct hit, with severe damage, loss of life, and injuries to members of its staff. It has not been possible to repair this damage since, and only a small portion of the out-patient department is now working (still to capacity). The in-patient department, standing isolated in Regent's Park, was totally destroyed in 1944 by a flying bomb, with heavy loss of life among patients and staff, and it has not since been rebuilt. The demand for this hospital's work has nevertheless continued unabated, and the work has had to be carried out under very difficult conditions—for example, in beds borrowed from other hospitals.

Whilst we may shed a tear for the Lock Hospital, whose needs have lessened, what must our feelings be for the West End Hospital, whose tragic damage, in the opinion of a Ministry of Health architect, was relatively greater than that of any other hospital in London ? If the Lock Hospital buildings are used to meet such a necessity, then those with an affection for this hospital should be consoled by the realization that the buildings will be serving a purpose as high and as valuable as heretofore.—I am, etc.,

London, W.1. T. ROWLAND HILL.

POINTS FROM LETTERS

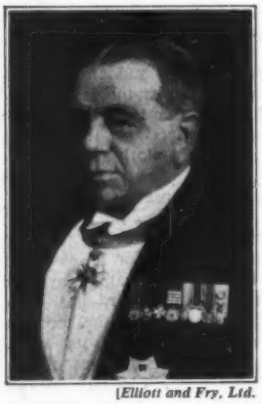
Treatment of Varicose Veins

Dr. J. W. HAUGHTON (Truro) writes: I was very glad to see Dr. R. Simpson Harvey's letter (June 4, p. 1005). I had a large number of cases (over 200) when I was surgeon at the Falmouth Military Hospital during the first war. I found, if I emptied the vein by elevating the limb, applied a light tourniquet at the upper end, injected a large amount of sclerosing fluid and gently forced it into the vein, that I got best results.

Obituary

SIR JAMES PURVES-STEWART, K.C.M.G., C.B., M.D., F.R.C.P.

Sir James Purves-Stewart, the well-known neurologist, died at his home in London on June 14 at the age of 79. The son of Mr. John Stewart, J.P., of Edinburgh, he was educated at the Royal High School of the city. He won many medals and prizes as a medical student at Edinburgh University, and graduated M.B., C.M., with first-class honours, in 1894. After holding resident posts in the Royal Infirmary his unusual ability led to his appointment as assistant, first to the professor of physiology and later to the professor of medicine. Stewart, as he was then, began at this early date to publish papers on various subjects, including one on the superficial anatomy of the nerves. A happily successful guess in 1895 about the location of a cerebellar tumour encouraged him, so he recounted in the preface to one of his books, to launch into the great stream of neurology. After proceeding M.D. in 1897 he left Edinburgh for London, where he was for two years a resident house-physician at the National Hospital for Nervous Diseases. At Edinburgh he had acquired a sound knowledge of physiology and medicine. At Queen Square he began to build on this foundation a specialized experience of neurology.



[Elliott and Fry, Ltd.

As physician to the Imperial Yeomanry Field Hospital, Stewart was mentioned in dispatches for his services in the South African campaign of 1900–1. When this war was over he visited the medical schools at Jena and Frankfurt. Returning to London, he was appointed honorary assistant physician to the Westminster Hospital. There he resumed teaching, first in pharmacology and therapeutics, later as lecturer on his chosen specialty of diseases of the nervous system. Soon afterwards he became known beyond the bounds of the Westminster Hospital with the publication in 1906 of his book *The Diagnosis of Nervous Diseases*. In the preface to the first edition he wrote: "It is seldom in medicine that we meet with diseases in their typical forms, at least as described in textbooks. More often we have to deal with patients who exhibit signs and symptoms common to several diseases. The present volume approaches the subject of diagnosis of nervous diseases from the clinical standpoint. . . ." This book was made up chiefly of lectures given to students and graduates, with reprints of articles in various journals and many illustrations. It broke new ground and was so well received that a second edition was called for in 1909 and a third by 1911. Each edition was freshened with new material and illustrations. French, German, Spanish, and even Arabic translations were called for. During the recent war, while in the U.S.A., he persuaded the well-known Boston neurologist, Dr. H. R. Viets, to help him in revising the book. Together they worked on it throughout each day for three weeks. The result of this thorough revision was sent to England by ship and through an accident of war was unfortunately lost for ever in the Atlantic Ocean.

During the 1914–18 war Stewart served in Malta, Gallipoli, Salonika, and Egypt. He was consulting physician to the Forces in the Mediterranean and Near East theatres. He was three times mentioned in dispatches, and was awarded the C.B. in 1916 and created K.C.M.G. in 1918. In 1927 he published a work on *Intracranial Tumours* in which he recorded his experience of 253 cases, of which 121 came to necropsy. He confined his notes entirely to his own observations, and gave no reference to the work of other clinicians. This particular book was later translated into Russian. Sir James Purves-Stewart was also responsible for the neurological volume in the "Oxford Medicine" series, and for twenty-six years he wrote the section on nervous diseases for the *Medical Annual*. Apart from his work at the Westminster Hospital he was honorary physician to the West End Hospital for Nervous Diseases, the Royal National Orthopaedic Hospital, the Central London Throat and Ear Hospital, and the King Edward VII Convalescent Home for Officers at Osborne.

In 1930 Purves-Stewart was intimately concerned with the report of the discovery by Miss Kathleen Chevassut of a virus in the cerebrospinal fluid of cases of disseminated sclerosis. Purves-Stewart gave his own account of the investigations, which had been going on for two years in the Westminster Hospital laboratories. He claimed that the "virus," *Spherula insularis*, was found in 176 of 189 cases of disseminated sclerosis. He also stated that he had treated patients with a vaccine and that improvement had taken place in 40 out of 70 of these cases. He pointed out, however, the fact that patients with this disease often had spontaneous remission. Later he published another paper, in collaboration with Braxton Hicks and Hocking, describing inoculation experiments on animals. These studies created much interest but were sharply criticized. So important would the discovery have been, if confirmed, that offers were made by the Medical Research Council and the Halley Stewart Trust to defray the cost of repetition of the work in other laboratories. In February, 1931, Purves-Stewart dissociated himself from Miss Chevassut, because of her refusal in December, 1930, to repeat the original observations for the Medical Research Council. She did accept, however, premises and facilities offered by the Halley Stewart Trust, and 162 cases were treated there. The results in 69 of these cases were reviewed by Dr. F. M. R. Walshe, who concluded that patients so treated were worse off than if they had been left alone. By September, 1931, Miss Chevassut claimed that the specific organism could readily be maintained in subcultures on solid media. The Trustees, reasonably enough, wished to examine these cultures, but none were forthcoming. Finally in March, 1932, the Trustees had no alternative but to abandon the trial and close the small institute they had made available for this work. Subsequently Dr. B. Halley Stewart (*B.M.J.*, 1932, 2, 32) described how the organisms originally said to be present in 93% of cases of disseminated sclerosis were detected by their discoverer less and less often. Subcultures of the "specific organism" were also identified as pure cultures of the virus of bovine pleuropneumonia. Describing his uncongenial task, Dr. Halley Stewart mentioned that in her original paper on the subject Miss Chevassut had described her virus as bearing a striking resemblance to that of bovine pleuropneumonia.

Sir James Purves-Stewart was elected a Fellow of the Royal College of Physicians of London in 1906 and acted as examiner in medicine in 1904–8 and 1922–6. At annual meetings of the B.M.A. he served as secretary in 1911, vice-president in 1922, and president in 1931 of the Section of Neurology. He was a member of several American and Continental Societies and the recipient of many scient

honours. He was always proud of his honorary rank of colonel, and at the age of 72 he contrived to serve in the Home Guard in the recent war, writing at that time his book *Over Military Age*. He made his home for many years of his retirement at the Belle Toute lighthouse on Beachy Head. Only last year he generously offered to present the lighthouse to the Eastbourne Corporation.

Purves-Stewart was very much of an individualist, and not free from the weaknesses common to lesser and greater men than himself. Among those who followed the same specialty in this country he occupied rather an isolated position. His enduring monument is his well-known and much used textbook, unique in neurological literature and of high value to those trying to master the most difficult of all medical arts, the diagnosis of diseases of the nervous system.

C. C. EASTERBROOK, M.D., F.R.C.P.Ed.

Dr. C. C. Easterbrook, who died in Edinburgh on June 5 at the age of 82, was for many years physician-superintendent of the Crichton Royal Institution, Dumfries.

Charles Cromhall Easterbrook was educated at George Watson's College, Edinburgh, and at Edinburgh University, where he graduated M.A. in 1887 and M.B., Ch.B. with first-class honours in 1892. He was a house-surgeon at the Royal Maternity Hospital and at the Royal Infirmary, house-physician at the Royal Infirmary and at the City Fever Hospital. He started his psychiatric career in 1894 under the late Sir Thomas Clouston, and for more than seven years he was on the staff of the Royal Edinburgh Mental Hospital at Morningside. He proceeded M.D. with honours in 1900 and became a member of the Royal College of Physicians of Edinburgh in the same year. He was elected a Fellow in 1903, a year after he had been appointed medical superintendent of the Ayr District Asylum. At Ayr he was responsible for considerable extensions to the hospital, and these included a new reception hospital and infirmary which he designed.

Dr. Easterbrook was appointed physician-superintendent of the Crichton Royal, Dumfries, in 1908, and held this appointment for 29 years until his retirement in 1937. Under his leadership the Crichton not only retained its position among the foremost of psychiatric institutions but enhanced its reputation.

The Crichton had grown very considerably under his predecessor Dr. Rutherford, and one of Dr. Easterbrook's earliest tasks was to put before his board of directors a plan for the future development of the institution, aimed at making possible an ideal classification of the patients and, incidentally, nearly doubling the bed accommodation. The last building of the scheme he submitted as far back as 1909 was not completed until 1938. The directors did him the honour of naming this building after him, and Easterbrook Hall will remain a fitting memorial to his life-long devotion to the mental invalid. The operating theatre and *x*-ray room, departments for hydrotherapy, physiotherapy, and occupational therapy, a swimming-pool, gymnasium, concert hall, café, library, and even a hairdressing saloon all show the foresight of the man who planned all these things so many years ago. He was to a large extent his own architect, and in his buildings he incorporated all that he had found best in the Continental mental hospitals and clinics. Dr. Easterbrook made many contributions to the literature, and in 1925 he delivered the Morison Lectures to the Royal College of Physicians of Edinburgh, choosing as his subject "Mental Invalids." After his retirement in 1937, as a labour of love he compiled the *Chronicle of the Crichton Royal*, a comprehensive review of the growth and activities of the hospital throughout the century from its inauguration in 1837.

Dr. Easterbrook married in 1905 Ann Elliot Thomson, daughter of the late William Thomson, of Clovensford, Selkirkshire, and she survives him with a son and daughter.

Professor R. J. A. Berry writes: The death, after a long crippling illness bravely borne to the end, of Dr. C. C. Easterbrook has deprived the mental service of Scotland of one of its great personalities.

His memory will last, I take it, as long and even longer than the Easterbrook Hall at the Crichton Royal Institution. But it is not for his work that I lament his passing. It is rather for those personal qualities which so endeared him to contemporaries who knew him as intimately as I did. On Jan. 19, 1900, there met together at 21, Heriot Row, Edinburgh, and for the first time, seven young Edinburgh medical graduates, who then and there formed themselves into a small literary club which they termed the Heptagon. Meeting at each others' houses during the winter session, it was the duty of the host to provide the mental and physical pabulum for the evening, the whole bonded and cemented together by the best of friendships. Charlie's death confronts the writer with the melancholy fact that of the original seven members he is now the only survivor. But there must surely be some who have memories of Andrew Balfour, J. W. Dowden, C. C. Easterbrook, J. S. Fowler, C. B. Ker, and A. Logan Turner. It was Balfour, the Sir Andrew of a later day but then known to us as "Beefy," who read the first of the Heptagon papers on Graham's *The Social Life of Scotland in the Eighteenth Century*. And now Charles Easterbrook, too, has gone.

Dr. ISAAC FLETCHER died at his home in Workington, Cumberland, on May 28, at the age of 85. He was born at Seaton, close to the town of Workington where he practised for sixty years. He graduated M.B., C.M. at Glasgow in 1890, took the D.P.H., and soon settled down to a long life in general practice. He always worked hard, but he crowded many other interests into what little spare time he had. He was essentially a family man, and was very happy to see his five sons carrying on the best traditions of the medical and dental professions, while his daughter formed the last link in a strongly united family circle. As would be expected, his hobbies were directly concerned with the welfare of others: he was an exceptionally keen worker in the St. John Ambulance Brigade, a Rotarian, and a Freemason, and he reached the highest ranks in all these brotherhoods. He was, too, a life-long teetotaller and non-smoker, and never ceased to support the temperance cause. Dr. Isaac Fletcher had little time to spend on games, but he was a keen Rugby Union footballer as a young man, and he ultimately became life president of the Cumberland Rugby League. He was not a big man physically but kept his trim figure all through his life. He was no motorist, and cycled his rounds practically up to the last. His capacity for life in all its aspects was immense—for example, in the first world war he looked after three practices, acted as school medical officer, and sat on recruiting boards. He practised for many years in the days when the G.P. had to deal with everything which came his way; major surgery, obstetric emergencies, and anaesthetics were all part of his daily routine. He was an artist in the use of chloroform, and his records with that anaesthetic will stand comparison surprisingly well with those of its modern counterparts. An outstandingly able example of the old type of doctor giving devoted and excellent service to the community, Dr. Isaac Fletcher was a kindly man, and his colleagues never hesitated to turn to him for help. A wise man, too, his counsel on any problem was worth having, and the dividing line between right and wrong was clear as crystal to him. The crowded church and the hosts of mourners at the graveside showed how great was the affection and respect felt for a man who had long outlived his generation, and yet died in the midst of a community which loved him and which will miss him as no other man in Workington could be missed.—A. G. A.

Medico-Legal

USE OF TITLE M.D.

[FROM OUR MEDICO-LEGAL CORRESPONDENT]

Section 40 of the Medical Act, 1858, does not forbid practice by the unqualified, but attempts to enable the public to distinguish between qualified and unqualified practitioners. It prescribes penalties for the offence of wilfully and falsely using certain well-recognized titles, of which doctor of medicine is one, or any description implying that the user is registered under the Act. Doubt had always existed until recently whether a practitioner who has the degree of doctor of medicine of a reputable foreign university but is not on the British *Medical Register* commits an offence if he uses that title. When a recent prosecution brought the question before the High Court for decision, the Lord Chief Justice considered it so important that he convened a full King's Bench Divisional Court of five judges to hear it argued.

Dr. William Luftig was originally Austrian, and obtained the degree of M.D. of Berlin University in 1913. He said that he became a British subject by naturalization in 1938 and practised in London and Northampton and from 1944 in Brighton, where he specialized in ophthalmology. He originally used on his plate the description "M.D. Berlin," but after he had received threatening letters and had had swastikas painted on his house he adopted the abbreviation "BLN." He had written four books in English on eye diseases, and in these he is described as "William Luftig, M.D.," with the addition underneath in small lettering of the words "Graduate of the University of Berlin." He was not on the British *Register*, although he could have applied for registration under the Defence (General) Regulations, 1939. Mr. Thomas Stanley Younghusband, on behalf of the Medical Defence Union, preferred an information against him before the Brighton justices alleging that on May 25, 1948, and subsequently, he falsely used the title of doctor of medicine and the description M.D., thereby implying that he was registered under the Act of 1858. The justices held that no offence against Section 40 had been committed and that the use of the letters M.D. BLN did not imply that he was registered. The prosecutor appealed to the High Court.

The case for the prosecution, argued by Mr. Cecil Havers, K.C., was that Dr. Luftig was not a doctor of medicine within the meaning of the Act, and that, if that were so, he had contravened the section by wilfully and falsely using the letters M.D. after his name; that the use of those letters implied that he was registered under the Act of 1858 and that, as he was not, that use constituted a similar contravention of Section 40; that the initials BLN were unknown in this country as an abbreviation for Berlin and there was no evidence that they were so known elsewhere; that BLN by itself was meaningless and implied that Dr. Luftig held a separate degree so described, and that M.D. stood alone and meant that he was an English doctor of medicine registered under the Act. Mr. Havers submitted that it was unlawful for anyone to use the letters M.D. unless he was a registered medical practitioner or possessed a qualification entitling him to be registered. It would not have been sufficient to avoid an offence if Dr. Luftig had used the full word Berlin after the M.D. Alternatively, there would have been no offence in his description of himself had he not engaged in the practice of medicine.

Mr. D. E. Evans, who appeared for Dr. Luftig, submitted that the true construction of Section 40 was that it prohibited the use wilfully and falsely of any of the specified well-known descriptions by someone who had no right or title or claim to them. That was not so in this case, for Dr. Luftig held the qualification of a recognized foreign university. If a man had a genuine degree in medicine of a well-known university he committed no offence under the Act if he described himself as M.D., even if he did not add any indication such as "Berlin" or "New York," for he had said nothing that was false. Dr. Luftig had used the letters BLN in order to avoid drawing unnecessary attention to his former nationality. His motive was not related to extending his practice or to defrauding the public in relation to his right to practise.

The Court's Judgment

The court reserved its judgment for a week, and the Lord Chief Justice, reading it, said that there was no doubt that the justices had considered that the diploma produced by Dr. Luftig was a diploma granted by a genuine university. The term "doctor" was now commonly used to mean any medical practitioner, but when it was used in conjunction with some particular branch of learning it meant one who in any faculty had attained to the highest degree conferred by a university. A person who described himself as a doctor of medicine represented that he had had that degree conferred on him by a university as the result of competent examination. The courts would know how to handle an imposture consisting of the use of the description doctor of medicine on the strength of a piece of parchment and a hood bought from some commercial concern. The Medical Act of 1886, providing for reciprocity with foreign universities, did not apply in the present case because it had never been applied by Order in Council to Germany. Much of the difficulty surrounding the present question came from the opening words of Section 40: "Any person who shall wilfully and falsely pretend to be. . . ." Other statutes concerning other professions, such as those of a solicitor or a dentist, did not contain the words "wilfully and falsely." If Mr. Havers's contention that the title "doctor of medicine" could only be used by a registered person was right, it would be an offence for the Regius Professor of Medicine at one of our great universities, who might not have taken steps to be registered because he had no intention of practising, to describe himself as a doctor of medicine. Counsel had also submitted alternatively that the Act at least prevented a man from using the title unless he was qualified to be registered; but the Court could find no words in the Act to support that contention. A man could be registered only if he possessed certain qualifications; but if he used a title which would imply that he was registered, he would commit an offence if he were not in fact registered, however qualified he might be.

The full court had been convened particularly because the judgments in the earlier case of *Jutson* v. *Barrow* (1939) contained some dicta which appeared to conflict with earlier authorities which had not then been cited to the court. *Jutson's* case seemed to contain an absolute prohibition against the use of the description "doctor of medicine" by an unregistered person who had a genuine doctorate; but that case was distinguishable from the present one, as that practitioner had been medically unqualified besides being unregistered. The earlier cases before *Jutson* v. *Barrow* represented an unbroken line of authority from 1860 to 1899 to the effect that to commit an offence against Section 40 the defendant must have acted wilfully and falsely; that it was for the justices to decide whether he had done so; and, also, that he did not commit an offence if he honestly believed that he was within his rights in describing himself as he did. He must, of course, have a reasonable ground for his belief. The presence or absence of the "guilty mind" must be tested on ordinary principles and in the light of common sense.

Dr. Luftig had a genuine degree of doctor of medicine conferred by a foreign university. There was therefore no reason why he should not use that title, and the justices had been amply justified in finding that he did not use it wilfully and falsely. If Dr. Luftig described himself as "M.D. Berlin," then, clearly, on the authorities, he was entitled to do so and committed no offence; he was describing himself as what he was, and the addition of the word "Berlin" showed that he was not claiming to be possessed of one of the degrees mentioned in the Act, and, therefore, did not represent that he was registered. The real difficulty in the case was his use of the abbreviation "BLN." The authorities, however, obliged the court to hold that it was for the justices to decide whether, in so doing, he had acted falsely and wilfully, and they must be taken to have found that he did not so act.

The justices had further found that the description "M.D., BLN" did not imply that Dr. Luftig was registered. They might have decided that point the other way, and the court hoped that Dr. Luftig would not in future use that abbreviation. As there was some evidence on which the justices could find that Dr. Luftig had not acted wilfully or falsely, it followed that the appeal must be dismissed. The cases were in a

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* Lancet, 1949, *i*, 344

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complete fog, and their Lordships thought the time had come when the position might be clarified by further legislation.

Comment

The most difficult element in this important case was, of course, the absence of a clear prohibition against practice by an unregistered person, and the presence in its place, in Section 40, of the prohibition against the use of titles suggesting registration, with the requirement of proof of a guilty intent. The Court's decision settles a question which has been perplexing the profession and their legal advisers for the best part of a century, but it also legalizes the use of a variety of titles conferred by reputable foreign universities without specifying their source. What, also, is the position if a practitioner calls himself M.D. on the strength of a doctorate conferred by a Dominion university which is reputable enough but the medical qualifications of which the General Medical Council will not for the moment accept for registration, perhaps because the teaching or the examinations do not come up to the Council's standards? Will a court be asked to say that use of the title M.D. conferred during the period of the Council's displeasure infringes the Act, although one conferred at another time is registrable?

It is probably too much to hope that Parliament will find time for the legislation suggested by the Court, or that if it did it would restrict the practice of medicine to registered persons; but much trouble would be saved if it would remove the requirement "wilfully and falsely" and make the use of an unregistered title unlawful irrespective of motive. Regius professors of medicine, presumably, could safely be left to look after themselves.

Universities and Colleges

UNIVERSITY OF OXFORD

In a Congregation held on June 4 the following degrees were conferred:

D.M.—P. S. Buckley, *E. H. Brown.
B.M.—P. S. Buckley.

* In absence.

UNIVERSITY OF WALES

The following candidates at the Welsh National School of Medicine have satisfied the examiners at the examination indicated:

TUBERCULOUS DISEASES DIPLOMA.—I. L. Briggs, A. R. Corrado, K. B. Gore, *E. H. Horton, S. C. Laha, *D. R. Lewis, A. W. E. Moreira, D. R. Nagpaul, K. Z. Nowak, B. F. X. Scallan, S. D. Sharma, M. H. Sherif, N. M. Sinha, *J. M. Smith.

* With distinction.

UNIVERSITY OF LEEDS

W. K. J. Walls, M.B., Ch.B., has been appointed Lecturer in Anatomy in the University.

ROYAL COLLEGE OF SURGEONS OF ENGLAND

At a meeting of the Council of the College held on June 9, with Lord Webb-Johnson, President, in the chair, the Honorary Medal of the College was presented to Mr. Arthur Sims, Professor F. Wood Jones, and Professor W. E. Gye.

A Certificate of Honourable Mention for his Jacksonian Essay was presented to Mr. C. G. Rob.

The following were co-opted to the Council for the year 1949–50, representing the branches of practice indicated in parentheses: Dr. H. Guy Dain (General Practice), Mr. J. M. Wyatt (Gynaecology and Obstetrics), Mr. V. E. Negus (Oto-laryngology), Mr. A. D. Marston (Anaesthetics), Mr. J. H. Doggart (Ophthalmology), Professor R. V. Bradlaw (Dental Surgery), Mr. B. W. Windeyer (Radiology).

Dr. H. D. Ross was appointed as Lecturer in Pathology in the College.

Diplomas of Fellowship were granted to the following successful candidates:

C. W. F. Burnett, W. H. H. J. de W. de Wytt, R. D. Ewing, G. W. V. Greig, J. M. M. Drew, P. H. Jayes, H. H. W. Jackson, B. D. Stutter, E. N. Owen, Mary Savory, J. R. Hudson, G. R. Fisk, H. M. Jamison, J. P. Jackson, W. H. W. Jayne, E. P. Kempsey, R. T. Hinde, P. A. L. Roberts, M. Hershman, H. P. Jones, M. Bates, R. C. Bell, D. H. C. Harland, C. C. K. Smith, J. H. Peacock, P. H. Wood, P. B. Counsell, D. H. Teasdale, J. Wilks, T. L. Schofield, T. O. Candler, J. H. L. Ferguson, T. G. Harvey, G. C. Lloyd-Roberts, H. O. Thomas, H. Davis, M. P. Pick, H. Hassall, T. B. Smith, C. H. Barnett, N. G. McGuire, J. L. Wakelin, R. E. Connor, M. R. Williams, R. D. de Vere, D. H. Woodhead, C. H. de Boer, W. H. Lonsdale, F. W. P. Dixon, W. Herschell, W. G. Schulze, D. J. Waterston, T. D. Kelly, A. P. Sandrasagra, J. R. Frylinck, K. C. McKeown, A. Y. Mason, J. E. Buck, P. K. Duraiswami, F. B. Korkis, W. R. McKechnie, J. A. B. Thomas, J. D. Hallissy, K. Harrison, J. R. Magarey, D. M. Morrissey, C. J. Rustomjee, G. R. Yarwood, W. R. Carswell, B. M. Hay, F. I. Herbert, J. D. Sidey, S. C. F. Stephenson, F. R. Zadik, H. K. Bourns, H. L. Brunow, T. C. H. Davies, K. N. Kashyap, A. I. Lichter, G. G. C. McKenzie, N. S. Rao, E. A. Turner, A. G. A. Albers, A. Glass, N. C. Newton, H. I. Rees, C. R. E. Stephens, C. Balakrishnan, S. de C. Barclay, G. G. Ferguson, J. B. Foster, N. A. Fowler, H. W. Gowland, D. MacK. Hamilton, L. A. Jacobs, E. Ll. H. Jones, H. H. Mirza, D. W. H. Ruddick, W. A. Wilson, G. Y. Akrawi, W. Burnett, O. O. Cowpe, I. D. Henderson, E. R. Lecutier, W. J. S. Melvin, A. F. Robinson, F. Robinson, P. J. M. van Miert, D. J. Wurth, D. Yassa, I. F. Barwell-Clarke, N. K. Connolly, M. Fredman, I. J. C. Frew, N. S. Hooton, S. Konar, J. M. Langham, D. M. McG. Portley, J. H. Saunders, Barbara F. Smith, M. R. Stanley, J. K. Watt, A. R. Anscombe, P. F. Boreham, R. Brearley, J. E. Critchley, R. B. Lynn, S. Sen.

Diplomas of Membership were granted to Eleanor H. Barrington, Thelma W. Dafforn, and S. N. Mathur.

Dr. C. W. Freeman (U.S.A.), Colonel J. L. Bernier (U.S.A.), Dr. R. Ahmed (Calcutta), Dr. N. N. Bery (Delhi), Dr. V. M. Desai (Bombay), and Dr. H. P. Moolganonkar (Bombay) were elected Fellows in Dental Surgery.

A Diploma in Tropical Medicine and Hygiene was granted jointly with the Royal College of Physicians of London to Y. G. Abdelal.

Diplomas in Medical Radio-diagnosis, in Medical Radiotherapy, and in Anaesthetics were granted jointly with the Royal College of Physicians of London as follows:

DIPLOMA IN MEDICAL RADIO-DIAGNOSIS.—D. H. Bodger, P. Cliff, J. F. Doherty, P. K. D. Edmunds, A. Giordani, T. Griffiths, P. K. Haldar, D. I. Harries, B. B. Harrison, Hung-Chin Ho, G. T. Holroyd, G. A. MacDonald, J. P. MacLaughlin, H. F. March, T. L. C. Pratt, S. P. Robson, F. G. M. Ross, J. Rubin, Jean M. Sheach, J. A. Shiers, G. M. Sinclair, D. S. Singh, C. C. Smith, R. S. Smith, P. H. D. Stone, Z. L. Szur, R. J. S. Walker, A. S. Whitehead, F. B. Wright.

DIPLOMA IN MEDICAL RADIOTHERAPY.—I. G. D. Bell, W. H. Bond, I. F. J. Churchill-Davidson, L. Cohen, W. J. L. Francis, J. McD. Glennie, A. W. G. Goolden, G. F. Green, S. Kramer, V. B. Levison, S. Londoño, Lilian J. Mallender, Marjorie S. Milln, R. F. Parfitt, J. J. Phelan, Y. Sidiq, H. C. Warrington.

DIPLOMA IN ANAESTHETICS.—D. C. Adamson, T. D. Ap Ivor, Agnes W. Baker, D. K. Ballingall, D. Beaton, F. W. Chippindale, H. A. Condon, Margaret R. Connolly, Elizabeth S. N. Fenton, E. N. S. Fry, K. B. Glynn, J. J. Hargadon, C. B. Holland, C. D. T. James, R. D. Levis, O. I. Lewis, S. Lipton, W. G. G. Loyn, L. E. McDonnell, W. G. McEwen, B. H. McGuirk, E. S. Machell, H. G. Middleton, B. G. P. Oakenfull, N. P. Read, M. E. Samrah, R. G. Sykes, J. E. Tees, J. G. Warnock, H. Y. Wishart.

The following hospitals were recognized under paragraph 23 of the F.R.C.S. regulations: Bromley Hospital (Senior and junior house-surgeon); Cirencester Memorial Hospital (Senior house-surgeon) (until June, 1950); Farnborough Hospital (Registrar to ear, nose, and throat unit); Central Middlesex Hospital (Surgical registrar oto-rhino-laryngology).

ROYAL COLLEGE OF PHYSICIANS OF IRELAND

The following have been admitted as Fellows of the College: Honor M. Purser, J. A. O'Sullivan, S. P. Dundon, B. G. Alton, B. Mayne.

The following have been admitted as Members of the College: W. L. Burrowes, C. P. Dempsey, R. S. Garewal, J. B. Lyons, M. A. Majekodunmi, B. E. Swain, J. M. Taylor, E. L. Wilson, M. B. Conlon (*in absentia*).

ROYAL COLLEGE OF OBSTETRICIANS AND GYNAECOLOGISTS

At a meeting of the Council of the College held on May 28, with the President, Sir William Gilliatt, in the chair, the following were elected to Council to fill vacancies caused by retirement, statutory and otherwise: As representatives of the Fellows: Professor O'Donel Thornley D. Browne (Dublin), Mr. George Frederick Gibberd (London), Professor Hilda Nora Lloyd (Birmingham), Mr. John Eric Stacey (Sheffield). As representatives of the Members: Mr. Gavin Boyd (Belfast), Leslie Bonthron Patrick (Sheffield).

The following were admitted to Fellowship of the College: Doris C. Bates, R. B. Charlton, K. M. K. Duff, M. D. A. Evans, J. D. S. Flew, B. Gilbert, J. W. Johnstone, W. I. C. Morris, Margaret M. Nolan, C. K. Vartan, W. Waddell, R. G. Worcester.

The following were admitted to Membership of the College: G. McG. Barr, A. C. Barthels, D. W. Bentinck, B. Bhattacharya, D. K. Black, Kathleen M. Bower, Muriel Brighton, C. H. Brown, J. M. Buchanan, D. P. Cocks, H. J. A. Conte-Mendoza, E. Cope, S. E. Craig, F. A. L. da Cunha, F. B. Davidson, J. Dei, F. Denny, N. S. Devi, C. J. Dewhurst, Kathleen A. Dru Drury, J. G. Dumoulin, J. M. Duncan, L. T. El-Badri, B. H. Ellis, H. R. England, I. B. Faris, B. J. Frankenberg, J. S. Fraser, W. K. Frewen, H. G. Furnell, L. W. Gall, G. B. Gibson, L. S. Glass, Cecilie Greig, G. T. H. Harris, E. I. Holloway, C. G. Irwin, W. H. Laird, R. G. Law, Silvia C. Lewin, Ethna W. Little, L. E. Lotimer, R. L. Lunt, J. G. McCarroll, H. A. McCredie, J. A. McGhie, J. F. McInerney, R. M. McIntosh, I. D. Macintyre, A. A. McKirdy, A. T. McNeil, D. S. Mathews, G. Mitchell, J. E. E. Morgan, N. F. Morris, N. Noble, A. F. Pearson, H. E. Pellew, H. K. Porter, D. A. Ranasinghe, B. C. M. Reed, J. S. Reid, W. A. Robson, E. S. Rogers, J. K. Russell, H. Sayeed, C. R. Sluming, D. F. Smith, R. B. C. Stevenson, A. S. Subramani, J. Suchet, B. M. Sutherland, Eleanor Tennant, Mary E. Tighe, Mary U. Wilkin, E. O. Williams, E. G. Zacks.

No. 22

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended June 4.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1949					1948 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever	27	1	14	3	—	42	6	20	2	1
Deaths		1	1				1	—		
Diphtheria	93	9	40	1	4	166	17	36	13	4
Deaths	3	1	—	—	—	1	—	—	—	—
Dysentery	99	7	48	—	1	95	18	64	—	—
Deaths				—	—				—	—
Encephalitis lethargica, acute	—	—	—	—	—	—	—	1	—	—
Deaths		—					—			
Erysipelas			27	7	2			34	11	8
Deaths		—					—			
Infective enteritis or diarrhoea under 2 years				34					12	
Deaths	20	3	4	—	—	33	3	8	—	—
Measles*	9,773	1083	457	236	172	10,824	818	195	162	74
Deaths†			—	2	—			—	—	—
Ophthalmia neonatorum	28	1	7	1	—	58	7	5	—	—
Deaths										
Paratyphoid fever	7	1	—	2(B)	—	2	—	1(B)	1(B)	—
Deaths	—	—	—	—	—	—	—	—	—	—
Pneumonia, influenzal	493	23	6	5	5	479	19	3	6	2
Deaths (from influenza)‡	15	—	—	—	—	3	—	—	—	—
Pneumonia, primary			180	27				180	51	
Deaths	140	22		4	3	175	31		12	7
Polio-encephalitis, acute	—	—				1	—			
Deaths										
Poliomyelitis, acute	13	1	5	—	—	21	4	1	2	—
Deaths§	—	—				—	—			
Puerperal fever		—	7				2	14		—
Deaths										
Puerperal pyrexia‖	85	7	2	—	—	130	7	12	—	—
Deaths		—					—			
Relapsing fever	—	—			—	—	—			—
Deaths										
Scarlet fever	1,242	90	174	72	36	1,547	107	257	37	36
Deaths†			—	—	—			—	—	—
Smallpox	—	—	—	—	—	—	—	—	—	—
Deaths				—	—				—	—
Typhoid fever	4	—	—	—	1	1	—	—	4	—
Deaths	—	—	—	—	—	—	—	—	—	—
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths				—	—				—	—
Whooping-cough*	2,178	111	129	164	73	3,207	243	51	96	19
Deaths	6	1	1	2	—	4	1	—	1	—
Deaths (0–1 year)	254	34	33	21	9	298	45	49	25	17
Infant mortality rate (per 1,000 live births)										
Deaths (excluding still-births)	4,505	671	562	159	101	4,218	682	617	174	120
Annual death rate (per 1,000 persons living)			11·3	9·9				12·5	10·9	
Live births	7,607	1268	1008	464	245	7,924	1252	952	456	293
Annual rate per 1,000 persons living			20·2	28·8		–		19·2	28·5	
Stillbirths	190	25	30			187	19	34		
Rate per 1,000 total births (including stillborn)			29					34		

* Measles and whooping-cough are not notifiable in Scotland, and the returns are therefore an approximation only.

† Deaths from measles and scarlet fever for England and Wales, London (administrative county), will no longer be published.

‡ Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

§ The number of deaths from poliomyelitis and polio-encephalitis for England and Wales, London (administrative county), are combined.

‖ Includes puerperal fever for England and Wales, Eire, and Northern Ireland.

EPIDEMIOLOGICAL NOTES

Typhoid Fever at Fulham

Five cases of typhoid fever are now known to have occurred in Fulham M.B., in children between the ages of 4 and 14. The dates of onset were between May 29 and June 5. One patient, a girl aged 10, died. A few suspects admitted to hospital at about the same time have now proved to be free from infection. All five children were living close to each other in the south-east part of the borough and all have been shown to be infected with the same organism, Vi-phage Type D1. The usual inquiries have failed to bring to light a common aliment, although all are known to have eaten ice-cream from itinerant vendors about the presumed date of infection.

Discussion of Table

In *England and Wales* increases were reported in the notifications of measles 190 and dysentery 14. There was a decrease of 433 in the notifications of whooping-cough.

The largest increases in the incidence of measles were London 130 and Middlesex 98; the largest decreases were Kent 247, Yorkshire West Riding 116, and Derbyshire 92. The only notable change in the returns for scarlet fever was a decrease of 29 in Yorkshire West Riding. There was very little change in the notifications of diphtheria; a decrease of 5 in London was the largest variation. The chief feature of the notifications of whooping-cough was a decrease of 94 in Warwickshire.

Notifications of dysentery rose from 16 to 67 in Lancashire. The chief outbreaks in this county were Oldham C.B. 39, Liverpool C.B. 11, and Chadderton U.D. 11. A large outbreak of food poisoning with 161 cases was notified in Yorkshire West Riding, Bradford C.B.

In *Scotland* there were decreases in the notifications of measles 140, whooping-cough 34, and scarlet fever 15. There were increases in the incidence of diphtheria 17 and acute primary pneumonia 15. In the city of Glasgow the notifications of diphtheria and dysentery respectively were 12 and 10 above the totals for the preceding week.

In *Eire* the notifications of whooping-cough increased by 50, and the notifications of diarrhoea and enteritis decreased by 9. The rise in the incidence of whooping-cough was due to small outbreaks in the rural districts, notably Dublin, Cill Droichid No. 2 R.D., 21.

In *Northern Ireland* the largest variation in the returns of infectious diseases was a rise of 11 in the notifications of scarlet fever.

Week Ending June 11

Notifications of infectious diseases in England and Wales during the week included: scarlet fever 1,090, whooping-cough 1,806, diphtheria 81, measles 9,249, acute pneumonia 416, cerebrospinal fever 28, acute poliomyelitis 17, dysentery 53, paratyphoid 24, and typhoid 9.

Medical News

Visitors to Colombia

Mr. Ronald W. Raven and Dr. Laurence H. Morris have recently returned from Colombia, where they spent five weeks in the university teaching hospitals of Bogota, Medellin, and Cartagena. Mr. Raven delivered a course of lectures on the surgical treatment of cancer and performed operations for this disease. Dr. Morris gave lectures and demonstrations on anaesthesia. This is the first occasion on which a British surgical mission has visited Colombia; the invitation was given by the National University. Mr. Raven was elected honorary professor of the National University. The honour was conferred at a special meeting of the Academic Council of the university at which the British Ambassador was present. The honorary professorship has been given on seven previous occasions, but not before to a British subject.

Analysis of Public Health Nursing

The Nuffield Provincial Hospitals Trust, which has been conducting a detailed job analysis of the work of hospital nurses, will conduct a similar investigation in the field of public health nursing. This includes health visitors, home nurses, school nurses, tuberculosis visitors and nurses, and clinic nurses. It does not include midwives. A pilot survey will be carried out in six areas in England and Wales and two in Scotland (in Dundee and Lanarkshire) to test the method of analysis, after which the survey will be extended to a large number of areas throughout the country.

New Journal for Industrial Nurses

A new quarterly journal entitled *Journal for Industrial Nurses* comes from the Nuffield Department of Occupational Health at the University of Manchester. It will help nurses working in factories and industrial areas to understand the hazards peculiar to industrial life. The first number includes an article on "The Nurse in Her Treatment-room," by Professor R. E. Lane, and an account of "Health Problems Incidental to Pottery Manufacture in North Staffordshire," by Dr. Andrew Meiklejohn. Dr. R. S. F. Schilling discusses "A University Department of Occupational Health."

Medical Visitor from Greece

Professor Charles Alexandridis, professor of clinical medicine in the University of Salonica, arrived in London on June 14 under the auspices of the British Council to observe progress in general clinical medicine in Britain and meet British specialists in tropical diseases and diseases of the heart and blood. Professor Alexandridis is a past President of the Medical Society of Salonika and a Fellow of the Royal Society of Tropical Medicine and Hygiene.

Anti-measles Serum

Doctors wanting to obtain anti-measles serum should not prescribe it on Form E.C.10 but should apply to the nearest public health laboratory. The address of the laboratory, if not known, can be obtained from the medical officer of health.

Holidays for Chemists

The Minister of Health considers that, where a chemist wants to take a holiday but is unable to provide a deputy in his absence, he should be able to go for a week or two during the summer season if a rota can be arranged with neighbouring chemists.

Council of the R.C.V.S.

The council of the Royal College of Veterinary Surgeons has been reconstituted in accordance with the Veterinary Surgeons Act, 1948. Professor T. Dalling, Chief Veterinary Officer at the Ministry of Agriculture, has been elected president of the College for 1949–50. The Act provides that there shall be 20 elected members who are members of the Royal College and who are elected by their fellow members outside the Republic of Ireland. It also provides for four people to be appointed by the Privy Council and two for each university in the United Kingdom which has a registrable veterinary degree; one of these two from each university must be a member of the Royal College. The Act also lays down transitional provisions pending the establishment of a registrable veterinary degree in the various universities.

Wills

Sir Edmund Ivens Spriggs, of Ruthin, Denbighshire, left £18,273. Dr. Andrew Messer, of Lemington, Northumberland, left £5,610; Dr. Eric St. George Gilmore, of Chorlton-cum-Hardy, Manchester, £3,082; Dr. Robert Everard Whitting, formerly of Oxted, Surrey, £6,975; and Dr. Alfred Eugene Martin, of Boreham Wood, Herts, £27,223.

COMING EVENTS

Alexander Simpson-Smith Lecture

The Alexander Simpson-Smith Lecture for 1949 will be delivered under the auspices of the Institute of Child Health of the University of London by Professor Gordon Murray, Associate Professor of Surgery in the University of Toronto, at the Hospital for Sick Children, Great Ormond Street, London, W.C., on Monday, July 11, at 5 p.m., with Lord Webb-Johnson, P.R.C.S., in the chair. His subject is "The Artificial Kidney." Admission is by ticket only, obtainable from the Dean of the Institute of Child Health at the hospital.

Prosser White Oration

The Prosser White Annual Oration of the St. John's Hospital Dermatological Society will be given at the Royal Society of Medicine (1, Wimpole Street, London, W.), on Wednesday, July 6, at 4.30 p.m., by Professor Marion B. Sulzberger, Professor of Dermatology and Syphilology of the New York Skin and Cancer Unit. His subject is "Allergy: A Dermatologist's Reminiscences and Speculations."

Royal Institute of Public Health and Hygiene

The Harben Medal for "eminent services rendered to the public health" will be presented to Lord Boyd-Orr, F.R.S., and the Smith Award "to one recognized as having done the most noteworthy work in the discharge of his official duties" to Dr. M. T. Morgan, medical officer of health, Port of London Health Authority, at a meeting at the Institute (28, Portland Place, London, W.) on Thursday, July 21, at 3 p.m.

Urological Surgeons

The British Association of Urological Surgeons will hold its fifth annual meeting on June 30–July 3.

City and Hospitals Charity Contest

The City and Hospitals Charity Athletic Contest for the *Financial Times* Challenge Shield will be held at the University of London Sports Ground, Motspur Park, Surrey, on July 9. The admission fee is 1s. 6d. The proceeds will be devoted to charities.

Clinical Pathologists

The Association of Clinical Pathologists will hold its 42nd Scientific Meeting at the Department of Pathology, University College, Cork, on July 22 and 23.

Birmingham Region Consultants

A general meeting of all consultants and specialists in the Birmingham Region will take place on Saturday, June 25, at 2.15 p.m. at Nuffield House, Queen Elizabeth Hospital, Birmingham.

Commemoration Service

A special service has been arranged by the Indian Church Aid Association to be held at St. Margaret's, Westminster, on July 7 at 11.30 a.m. as a solemn act of commemoration and thanksgiving for the lives and work of many generations of British men and women who served in India in the various Indian Services, in the British and Indian Armies, in the work of the Church and missions, and in the field of trade and industry. Further information can be obtained from the secretary, Indian Church Aid Association, 5, Victoria Street, London, S.W.1.

N.A.P.T. Jubilee

Jubilee celebrations to be held by the National Association for the Prevention of Tuberculosis will include a Commonwealth and Empire Health and Tuberculosis Conference at the Central Hall, Westminster, on July 5–8, 1949.

SOCIETIES AND LECTURES

Tuesday

INSTITUTE OF DERMATOLOGY, 5, Lisle Street, Leicester Square, London, W.C.—June 28, 5 p.m., "*Background of Occupational Dermatoses*," by Dr. R. M. B. MacKenna.

INSTITUTE OF UROLOGY.—At St. Paul's Hospital, Endell Street, London, W.C., June 28, 11 a.m., "*Granuloma Venereum and Lymphogranuloma Inguinale*," by Dr. W. N. Mascall.

Wednesday

INSTITUTE OF DERMATOLOGY, 5, Lisle Street, Leicester Square, London, W.C.—June 29, 5 p.m., "*Systemic Mycological Infections*," by Dr. Clara Warren.

INSTITUTE OF UROLOGY.—At St. Paul's Hospital, Endell Street, London, W.C., June 29, (1) 11 a.m., "*Reiter's Syndrome*," by Dr. A. H. Harkness; (2) 5 p.m., "*A Survey of the Different Methods of Treatment available in Enlargement of the Prostate*," by Mr. R. Ogier Ward.

Thursday

CLINICAL SOCIETY OF THE ROYAL FREE HOSPITAL, Gray's Inn Road, London, W.C.—June 30, 5.15 p.m., "*The Open Wound in Surgery and its Function*," by Mr. Peter Essex-Lopresti. Visitors welcomed.

INSTITUTE OF DERMATOLOGY, 5, Lisle Street, Leicester Square, London, W.C.—June 30, 5 p.m., "*Acne*," by Dr. H. Corsi.

INSTITUTE OF UROLOGY.—At St. Paul's Hospital, Endell Street, London, W.C., June 30, (1) 11 a.m., "*Condylomata Acuminata*," by Dr. A. H. Harkness; (2) 5 p.m., "*Transvesical Operations on the Prostate*," by Mr. W. K. Irwin.

LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE, Keppel Street, W.C.—June 30, 3 p.m. Films: "*The African Schistosomiases*" (for instruction of medical profession) and "*Still Waters*" (for public education).

LONDON UNIVERSITY.—At Institute of Neurology, National Hospital, Queen Square, London, W.C., June 30, 5 p.m., "*Rathke's Pouch Tumours*," by Professor Geoffrey Jefferson, F.R.S.

ROYAL SOCIETY, Burlington House, Piccadilly, London, W.—June 30, 4.30 p.m., "*The Rhythmic Action and Respiration of Nerve Cells*," Croonian Lecture by Professor D. W. Bronk, Ph.D. (Philadelphia).

ST. GEORGE'S HOSPITAL MEDICAL SCHOOL, Hyde Park Corner, London, S.W.—June 30, 4.30 p.m., "*Neurology*," lecture-demonstration by Dr. D. J. Williams.

Friday

NORTH OF ENGLAND SOCIETY OF ANAESTHETISTS AND NEWCASTLE-UPON-TYNE OBSTETRICAL AND GYNAECOLOGICAL SOCIETY.—At Royal Victoria Infirmary, Newcastle-upon-Tyne, July 1, 7.30 p.m., "*Analgesia for Obstetrics*," by Dr. Robert A. Hingson (Baltimore).

APPOINTMENTS

COYNE, W. J., M.D., F.R.C.P.I., D.P.H., D.P.M., Governor, Central Criminal Asylum, Dundrum, Co. Dublin.

SMITH, J. MACLEAN, M.B., F.R.F.P.S., Fellow in the Department of Medicine, Johns Hopkins Hospital, Baltimore, 5, Maryland, U.S.A.

THOMAS, H. ORISHE'OLOMI, M.B., F.R.C.S., Lecturer, Department of Surgery, University College, Ibadan, Nigeria.

BIRTHS, MARRIAGES, AND DEATHS

BIRTHS

Ackner.—On June 11, 1949, at Bromley, Kent, to Jean (née Marley), wife of Dr. Brian Ackner, a son.

Clynton Reed.—On May 29, 1949, at Military Families Hospital, Moascar, M.E.L.F., to Jean Neilson (née Roy), wife of Lieutenant Colonel J. Clynton Reed, O.B.E., R.A.M.C., a son.

Cox.—On June 9, 1949, at 29 British Military Hospital, Hanover, to Dr. Irene, wife of Captain John Cox, R.A.M.C., a son—Jonathan Michael.

Ismay.—On June 3, 1949, in London, to Solange (née de la Motte), wife of Dr. D. G. Ismay, a daughter.

Laurance.—On June 9, 1949, at Weekley Rise, Kettering, to Audrey (née Kidner), the wife of Dr. Bernard M. Laurance, a son.

Rainer.—On June 10, 1949, at Bristol, to Iris, wife of E. H. Rainer, F.R.C.S., a second daughter—Madeleine Dorothy.

Tallack.—On June 4, 1949, at the Government Hospital, Wete, Pemba, Zanzibar, to Joyce, wife of Dr. R. J. K. Tallack, Colonial Medical Service, a daughter.

MARRIAGES

Milo-Turner—Burne.—On June 10, 1949, at St. Bartholomew's Church, Penn, Gilbert Milo-Turner, M.B., Ch.B., D.R.C.O.G., Tamworth, Staffs, to Felicity Mary Burne, S.R.N., "Wayford," Coalway Avenue, Wolverhampton.

Richards—Tighe.—On June 4, 1949, at St. Paul's Church, Sketty, Swansea, Denis George Blackwood Richards, M.R.C.P., to Mary Elizabeth Tighe, M.R.C.O.G.

DEATHS

Elliott.—On June 10, 1949, Charles Norton Gavin Elliott, L.R.C.P.&S.Ed., L.R.F.P.S.Glas., formerly of Old Portsmouth, and of Hilston, Denmead, Hants.

Johnston.—On June 4, 1949, at Kendal, George Ainslie Johnston, M.D., F.R.C.S.I., of Old House, Ambleside, Westmorland.

Macaulay.—On June 6, 1949, at Hawthornbank, Selkirk, Scotland, Thomas Symington Macaulay, M.D., F.R.F.P.S., D.T.M.&H., aged 67.

MacDonald.—On June 5, 1949, at 20, Brislington Hill, Bristol, William Forbes MacDonald, M.D., C.M.

McGrath.—On June 2, 1949, at 230, Kingston Road, Staines, Middlesex, John Joseph McGrath, M.D., D.P.H., formerly of Surbiton, Surrey.

Nicholls.—On June 3, 1949, at Clairfaye, Seaton, Devon, Thomas Burtonshaw Nicholls, M.B., Ch.B., Lieutenant-Colonel, R.A.M.C. (ret.).

Routh.—On June 6, 1949, at 141, Durleigh Road, Bridgwater, Somerset, Randolph Henry Felix Routh, M.R.C.S., L.R.C.P., aged 87.

Salkeld.—On June 7, 1949, at 36, Dean Park Road, Bournemouth, Charles Salkeld, M.B., B.S., aged 81.

Sharp.—On June 6, 1949, suddenly, on Okehampton golf course, Christopher James Lewen Sharp, M.C., M.B., B.Ch.

Slattery.—On June 10, 1949, at "The Shanty," Totnes, Devon, James Beary Slattery, M.D.

Southey.—On May 30, 1949, William George Southey, M.B., B.S., D.P.H., of 44, Wellowgate, Grimsby, Lincs.

The need for the greatest possible economy in the running of the hospital services was emphasized by the Rt. Hon. Arthur Woodburn, M.P., Secretary of State for Scotland, when he met the chairmen of the five Scottish regional hospital boards and of the boards of management in the four Northern and Eastern Regions in St. Andrew's House, Edinburgh, recently. Mr. Woodburn added, however, that the Government had no intention of cutting down on essential services—such as the provision of beds and nurses. If a thing was absolutely necessary it should be provided. He had no doubt that hospitals were already being run economically and that charges of gross extravagance were unjustified. People who thought, perhaps naturally, that the cost of hospital service was enormous forgot that, apart from the recent necessary increase in salaries, the vast bulk of hospital expenditure was not new. It was not his intention to issue any specific instructions on how economies were to be effected. The boards of management, as the people on the spot, would know best what developments could be postponed and what services spared. But, especially in view of the recent increases in nurses' salaries, he had to ask the boards to take a second look at their services and see if anything could be cut down. Real economies were more likely to come from small savings here and there throughout the Service than from any one spectacular cut. He thanked the boards for the excellent work they had done. It was a measure of their success that, despite the natural tendency to criticize public bodies, the only point of serious criticism about the hospital service had been its popularity and hence its cost. In the course of general discussion it was said that while relationships were good there was not enough contact between regional hospital boards and boards of management. A plea for more round-the-table conferences was advanced. Various chairmen argued that everything possible was being done to secure economies, but a great deal of lee-way had to be made up, particularly in view of the neglect during the war years.

Any Questions?

Correspondents should give their names and addresses (not for publication) and include all relevant details in their questions, which should be typed. We publish here a selection of those questions and answers which seem to be of general interest.

Penicillin Enhancement Factor

Q.—*My clinical experience has been that the new crystalline pure penicillin is not so effective as the sodium salt which preceded it. Is this the general view and, if so, why?*

A.—There are several different penicillins with a common nucleus but with different side-chains. Up to 1944 most of that produced commercially was in the form of penicillin G; thereafter purer compounds appeared which contained a large proportion of the less active penicillin K. The amorphous penicillin seems to contain impurities which enhance its effect *in vitro* and in animal experiments. These substances are heat-stable, and are together known as the "enhancement factor"; they are, of course, absent from crystalline penicillin G. Many clinicians have entertained suspicions similar to those of the questioner, but careful clinical trials have not shown that crystalline penicillin combined with enhancement factor is more effective than crystalline penicillin alone.

Cremor Sulphanilamidi et Sulphathiazoli, N.W.F.

Q.—*The National [War] Formulary, 1947, contained a valuable antiseptic cream—cremor sulphanilamidi et sulphathiazoli. Is there any valid reason for its omission from the National Formulary, 1949? How can sulphanilamide and sulphathiazole cream be prescribed in future unless the prescription is written in full? Incidentally, what justification is there for the new cremor proflavinae? There seems to be more than a suspicion that oily preparations of proflavine are useless as bacteriostatic preparations.*

A.—The *National Formulary* contains no sulphonamide cream because the balance of evidence is unfavourable to the local use of this group of drugs. There is, indeed, little satisfactory evidence that they are effective, but definite evidence that they may give rise to toxic reactions. The current view in the U.S.A. is summarized in the statement in *New and Non-official Remedies*, 1948:

"Experience gained in World War II seems to indicate that the use of crystalline sulphonamides and of sulphonamide ointments, creams, lotions, etc., as topical agents was not very successful in the management of wound infection or in treatment of infections of the skin or mucous membrane. The routine use of sulphonamides as topical applications in wounds, burns, and in superficial infections is therefore to be discouraged."

Sulphonamides locally applied may be harmful, since they may produce sensitization reactions in the skin if they are used for more than a few days. Once this has occurred it may prove impossible to give the same or even a different sulphonamide by mouth or locally without inducing a generalized eruption. Sulphathiazole is particularly liable to give rise to this form of sensitization.

The preparation cremor proflavinae replaces the emulsio acriflavinae, *B.P.C.*, which is popular mainly because it does not cause dressings to adhere to abraded surfaces. Garrod and Keynes (*British Medical Journal*, 1937, **2**, 1286) state of the emulsio acriflavinae, *B.P.C.*, that "it has no demonstrable action whatever." The cremor proflavinae, *N.F.*, though it contains the less toxic substance proflavine, is nevertheless still an oil-in-water emulsion, and, as the question suggests, the active drug will tend to remain in solution in the oily phase where it cannot exert much antiseptic activity. Wood (*Pharm. J.*, 1939, **1**, 327) has pointed out that emulsions of the water-in-oil type have far greater antiseptic activity in laboratory tests, and describes methods for making such preparations. The cremor aminacrinae, *N.F.*, could be used as an application to wounds, ulcers and burns, though it is intended primarily as an obstetric cream for application to the hands. The aminacrine is non-staining and is presented in a glycerin-jelly base.

In justification of the admission of the cremor proflavinae to the *National Formulary* it should be pointed out that the objections to it are based entirely on *in vitro* bacteriological studies. Many dermatologists are convinced of its activity as an antiseptic in clinical practice, and its inclusion in the *Formulary* was decided on only after approval by a committee of dermatologists.

Diphtheria Immunization

Q.—*What boosting dose of diphtheria immunizing material should be given to boys entering a boarding-school at the age of 12 to 14? Please discuss the following groups: (a) those immunized in infancy but not since; (b) those immunized in infancy and given a boosting dose at 5 years but none since; (c) those given only primary immunization at the age of 5 to 7 years. What material is recommended?*

A.—Boys of 12 to 14 entering a boarding-school with a variety of histories of previous artificial immunizations, to which must be added some degree of latent immunization, present a problem somewhat similar to that of student nurses entering hospital. It is necessary to find out what proportion of them are immune, irrespective of previous history, and this can best be done by Schick-testing all new entrants. Those who are Schick-positive should be given one dose of diphtheria prophylactic—for example, 0.2 ml. A.P.T.—if they have been previously immunized, and two doses of 0.3 ml. A.P.T., at a month's interval, if they have not; those who are Schick-negative may be left alone or given a single injection of 0.2 ml. T.A.F.

Difficulty arises in the case of boys in whom a pseudo-reaction with the control material occurs. They will usually give a severe local and sometimes constitutional reaction to any diphtheria prophylactic, and the best course is to leave them alone and to carry out another Schick test three to six months later. Of the three groups mentioned in the question, most of the boys who were immunized in infancy and had a booster dose at 5 years should be Schick-negative, since the booster dose has a decidedly stimulating effect on antibody production. Some authorities will recommend a booster dose for all three groups, irrespective of the Schick reaction; but, if this were done, some severe reactions, which would no doubt create a bad impression among the other boys and the parents, may be expected. T.A.F. is probably the prophylactic of choice at present for a booster dose, and a small amount—for example, 0.2 ml.—will suffice.

Senility and Testamentary Capacity

Q.—*A man of 80 died of senility in a home for the aged, where he had been resident for a year. During this time he made a will, legally correct and duly witnessed by a solicitor and a male nurse, leaving the residue of his property to his son and only small legacies to his three daughters. The latter feel that this was not their father's intention, and that they should contest the will on the grounds of the testator's senility. What is their position?*

A.—The will in this case could be successfully challenged only if the daughters can satisfy the court that their father, at the time he made the will, was unable, owing to senility, to understand what he was doing. The court would probably not accept the general proposition that senility is always progressive and does not admit of "lucid intervals"; on the contrary, it is common knowledge that the mental powers of senile patients, at least in the early stages of the disorder, may fluctuate considerably. It is recorded of Sir William Blizard, F.R.S. (*Brit. J. Surg.*, July, 1920, p. 4), that he died at the age of 92 of senile decay, but that he continued on the surgical staff of the London Hospital until the age of 91, and was actually engaged in his ordinary duties as an examiner at the Royal College of Surgeons only a week before his death. The court would presume that the testator had sound testamentary capacity unless the contrary is proved by evidence. The daughters should seek such evidence, which might be provided by the doctor in charge of the home in which their father was living at the time he made the will. The particular points on which the doctor should express an opinion are: whether the testator understood that all his children had a reasonable expectation of a fair share of the estate, and whether he had any reasonable grounds for leaving the bulk of it to the son to the exclusion of the daughters.

It was held in Cartwright *v.* Cartwright (1793, 1 Phill. 90; quoted with commentary by Kitchin, *Legal Problems in Medical Practice*, 1936, p. 143) that where the making of a will appeared to be "a rational act rationally done" the will should be upheld, even though the testator had manifested undoubted signs of mental disorder before and after making it. Any evidence relating to the testator's state of mind at the time he made the will should be considered, including that of the solicitor and the male nurse who witnessed the document; inquiry should also be made about whether the testator suffered from any delusions relating to the daughters—for instance, whether, without reasonable cause, he thought them unfit to inherit; or falsely believed them to be already properly provided for.

Protein Shock Therapy

Q.—*What is the usual intravenous dose of T.A.B. for protein shock therapy? What is the usual period between doses and, regarding anaphylactic reaction, what is the longest period observed between widely separated doses when the phenomenon has little chance of developing? For instance, if a patient received this form of T.A.B. a year ago, and now an intradermal skin test produces a marked reaction, does this contraindicate a repetition of intravenous therapy?*

A.—The usual dose of T.A.B. given intravenously is 25 million organisms initially, and subsequent doses are increased by 50 million organisms up to a maximum of 500 million. The usual interval between doses is 4 to 7 days. The dosage is not absolute and is varied to suit the patient. If the initial dose does not cause a reaction, then the second dose is given on the following day; while if the reaction is too severe, the same or a smaller dose is given subsequently. Anaphylactic reactions have not been recorded following this form of treatment. A positive skin reaction does not contraindicate further injections of T.A.B. Protein shock therapy with T.A.B. is, of course, not completely free from risk, and deaths have been recorded, but not from anaphylactic reaction.

Eggs in Water-glass

Q.—*Is any detrimental effect attributable to the use of water-glass as a preservative for eggs when these are used in the treatment of duodenal ulcer? Is there any reliable alternative?*

A.—No detrimental effect is attributable to the preservation of eggs by water-glass for any person well or ill, and so far as is known the nutritive value of eggs so preserved is not significantly reduced. The water-glass fills the porous parts of the shell but does not penetrate the egg membrane. It makes the egg air-tight and thus prevents oxidation and deterioration. Water-glass is the best known egg preservative for domestic use. Other methods extensively used on a commercial scale are treatment with mineral oil and cold storage.

Falling Hair

Q.—*Two years ago a young woman's hair became thin on the frontal half of the crown of the head. The condition has not altered since; the scalp looks healthy with only a minimum amount of dandruff. Concurrently with the fall of hair she gained 2 stones (12.7 kg.); she now weighs 9½ stones (60.3 kg), and her weight remains stationary. There is no other apparent glandular abnormality. Ultra-violet irradiation of the scalp has had no effect. What other treatment do you suggest?*

A.—Treatment in this case depends on the particular diagnosis. It is presumed that the fall of hair was not associated with any acute inflammation of the skin (such as erysipelas) or with any acute illness at the onset; that there is no present disease, especially about accessory nasal sinuses; and that the condition is not merely one of trichotillomania. The latter is a hysterical habit of pulling and breaking the hair and has an emotional basis. The probable cause in this case is endocrine, and further investigations along this line would seem to be indicated, especially in relation to the pituitary. The condition is certainly not a local disease of hair or scalp.

If hirsuties were an additional feature, this case might be one of the adreno-genital syndrome, in which there is an excessive secretion of androgens, and the woman loses the hair of the head along the same lines as men normally do, while at the

same time there is an increased growth of hair on the face and body. Should hirsuties not be present the symptomatology does not fit into any well-defined endocrinopathy. However, a weight-reducing diet, together with thyroid and the inunction of oestrogens locally, might prove of benefit. (See also "Any Questions?" March 19, 1949, p. 510.)

Refrigeration of Foodstuffs

Q.—*What are the public health regulations, if any, in regard to refrigeration of foodstuffs? Are there any types of refrigeration plant which are unsuitable for the cold storage of fresh meat?*

A.—There are no public health regulations concerned with the refrigeration of foodstuffs. A local authority can, if it likes, provide cold storage if it sets up a municipal slaughter-house or market; a laboratory which examines milk must also have suitable cold-storage accommodation for keeping certain samples. A food trader is at liberty to keep food in cold storage or not as he thinks fit. The temperatures employed and the type of plant—as, for example, those with through ventilation and those charged with carbon-dioxide gas—depend on the particular article of food dealt with and the purpose for which it is being frozen or stored. There are no commercial types of plant which are unsuitable for the cold storage of fresh meat, though those with through ventilation may cause some shrinkage and loss of weight of the meat.

Necrobiosis Lipoidica

Q.—*A woman aged 24 has necrobiosis lipoidica—confirmed by biopsy—covering an area of about 2 square inches (12.9 cm.) over the middle third of the tibia. Is there any treatment?*

A.—Necrobiosis lipoidica was originally thought to be limited to diabetics, but it has since been shown that this is true only in 90% of cases. It is, however, worth noting that this skin disease may precede the onset of diabetes mellitus by years or months. In the absence of evidence to the contrary, it is assumed that the patient in question is one of the 10% who are not diabetic. There is no specific treatment for necrobiosis lipoidica; the condition often appears to be self-limited, and the lesions commonly disappear leaving white scars. If ulceration or secondary infection takes place this complication will require conventional treatment. In diabetics careful control of the metabolic disorder is essential.

Dieting and Birth Weights

Q.—*Can dieting by an expectant mother have any effect on the weight of the baby at birth?*

A.—Under normal conditions there is no correlation between the birth weight of the baby and the maternal diet, or between birth weight and the maternal gain in weight, in pregnancy. Since the foetus is parasitic, diet restriction within reason does not result in small babies, nor does overeating produce large babies. The only circumstance which will affect the baby is severe and prolonged maternal starvation, and even then the birth weight of the child is not always significantly reduced.

Dry Grass Dust

Q.—*Is the dust which arises when grass is baled out of a grass-drying machine, if inhaled over a long period, likely to be detrimental to the health of the operator? Could it affect the lungs or cause dermatitis?*

A.—The term "grass" embraces any plant of the order Gramineae. It must be assumed that the inquiry is concerned with dust evolved during the baling of ordinary meadow grass from British fields. No cases of respiratory or skin disease through the breathing or handling of the dust from British grasses have been traced in the literature. However, it is well known that some persons are allergic to pollen, which may be the cause of hay-fever. Some of the grasses which by their pollen cause hay-fever are Bermuda grass (*Cynodon dactylon*), Johnson grass (*Sorghum halapense*), and Timothy grass (*Phleum pratense*). The handling of gramineous plants has been known to cause skin irritation in susceptible persons—a papular exanthem with itching, often accompanied by fever, which lasts between six and twelve hours. Rosniti mentions several gramineous plants which have caused epidemic dermatitis. Twenty-five members of seven families suffered from erythema after having cut sorghum (Hoffer). The admixture of the dry dust of grasses with air may constitute an explosive hazard if exposed to a source of heat.

NOTES AND COMMENTS

Keloid.—Dr. H. P. PICKERILL (Wellington, New Zealand) writes: In "Any Questions?" (Feb. 26, p. 377) various forms of treatment for keloid are discussed. There should be, and is, only one form of satisfactory treatment for this condition—namely, excision and grafting. Excision alone is often unsatisfactory if there is any introduction of tension. Remnants of keloid remaining also seem to induce recurrence. It is necessary to excise widely and deeply, just as though a locally malignant tumour was being dealt with. Radiation sometimes produces a reduction in the size of a keloid, but never its obliteration with an acceptable cosmetic and functional result. Radiation, moreover, leaves the tissues in a very unsatisfactory condition for subsequent plastic surgery. Very large keloids can be treated by excision and replacement by a whole thickness or thick split skin graft, care being taken that in the latter case due allowance is made for subsequent contraction. A post-operative period of immobilization in extreme flexion for extensor surfaces, followed by massage and passive movements, will practically always give good functional and cosmetic results. It would save patients much disappointment if plastic surgery were always considered first instead of as a last resort in the treatment of keloid.

Pig as Vector of Ascaris.—Professor R. T. LEIPER (Director of the Commonwealth Bureau of Agricultural Parasitology, St. Albans) writes: In "Any Questions?" (April 23, p. 735) it is correctly stated that the pig strain of *Ascaris lumbricoides* does not normally develop to maturity in man. That embryonated eggs from pig faeces hatch in the human intestine and the larvae migrate through the lungs was demonstrated experimentally by Koino in 1922, although in the human intestine they failed to develop further. Similarly embryonated eggs of the human strain of *Ascaris lumbricoides* hatch in the intestine of the pig and migrate through the lungs. It cannot therefore be maintained either that the pig "plays a part in the dissemination of eggs of *Ascaris lumbricoides* which have been ingested previously with human faeces" or that there is no risk from the use of manure from pigs naturally infested with *Ascaris lumbricoides*. The differential diagnosis of the bronchial irritation, spastic cough, and pulmonitis which accompany the migration of ascaris larvae of the human strain is very difficult, depending as it does on the discovery of the larvae in the sputum, and has seldom been made even in countries where massive infections occur. No one has yet claimed to have diagnosed a case in this country. But it does not follow that bronchial or pulmonary symptoms due to the swallowing of embryonated eggs of either pig or human strain do not occur here.

Warning to Hospitals.—Dr. JULIUS BURNFORD (London, W.1) writes: During the past two or three months I have received case reports on a man by name Leonard Bradford, age 41, giving an address at Vauxhall Bridge Road, or Vauxhall Road, Westminster, from five hospitals into which he got himself admitted, telling of a fit or attack of unconsciousness. He presents symptoms of diplopia; slurred speech; eccentric pupils; sometimes a spastic right limb, at others a coarse tremor. He says he was diagnosed as encephalitis at the West London Hospital two or three years ago, under me. After one, two, or three days when investigations are about to be made he discharges himself and reappears in another hospital with the same story. Reports have come to me from the Hammersmith Hospital; London Temperance Hospital; University College; Queen Mary's Hospital, Stratford; and within one week of the latter from the General Infirmary, Macclesfield. I have sent these to Scotland Yard and the local police advise me that, on admission in future, the hospital concerned should inform the police and they could then deal with him. As I have not been active at the West London Hospital for ten years he can know nothing about me.

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